Appendix C

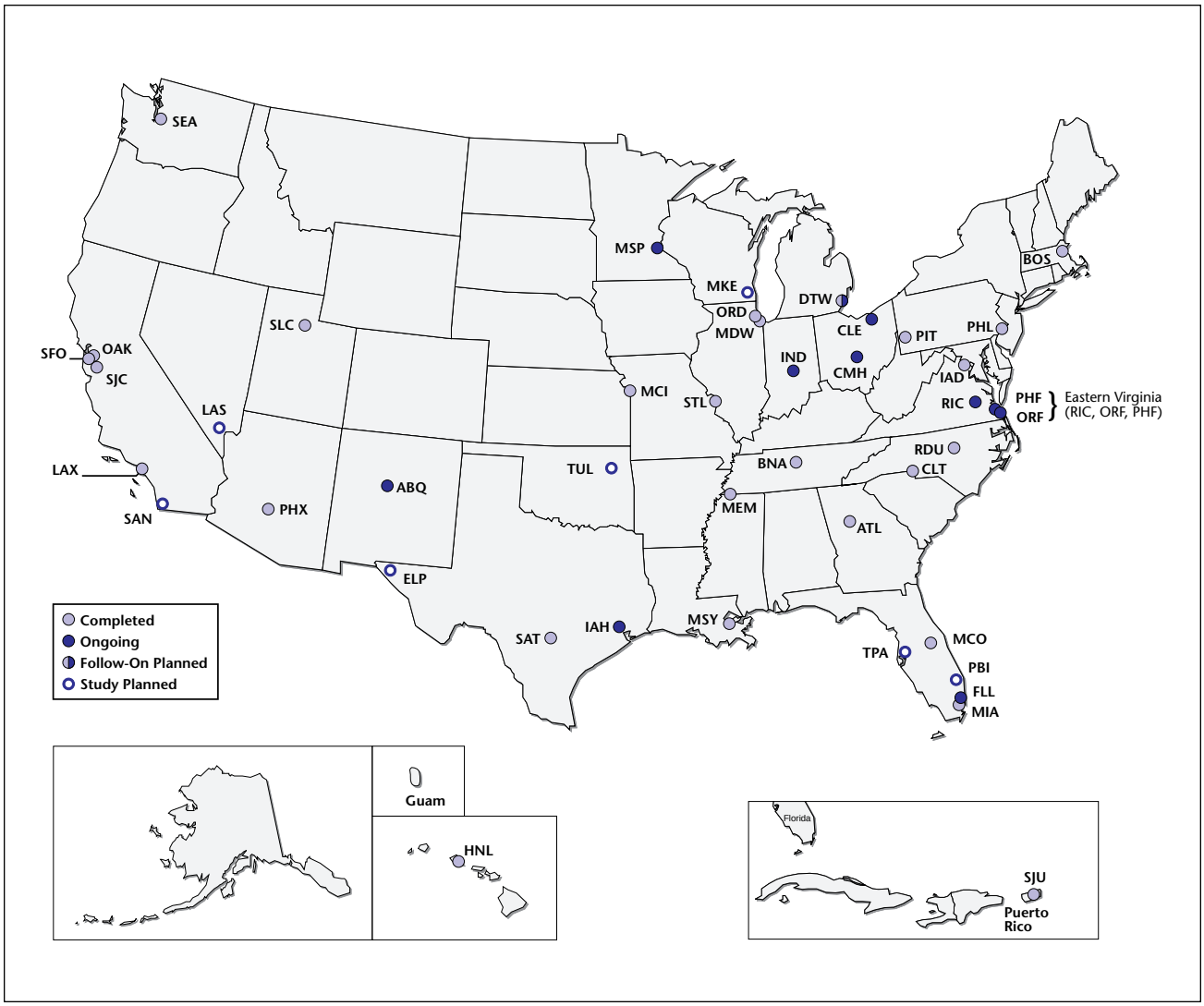
Airport Capacity Design Team Project Summaries[1]

The Airport Capacity Design Teams identify and evaluate various corrective actions, which, if implemented, would increase capacity, improve operational efficiency, and reduce delay at the airports under study. The Capacity Teams examine each alternative to determine its technical merit. Environmental, socioeconomic, and political issues are not assessed. These issues will be addressed in other airport planning efforts, like the master planning process.

For those airports where the Airport Capacity Design Team has completed its study, the project summaries and airport layouts contained in this appendix document the capacity improvement alternatives included in the final report. They have not been updated to include any subsequent changes at the airports. For example, the Lambert St. Louis and Memphis International Airport studies were completed in 1988 and there have been significant changes since that time. The current runway plans at these and the other top 100 airports are contained in Appendix D. For those airports where the Capacity Team's analysis is still in progress, the capacity improvement alternatives listed may well change as the study evolves.

The individual recommendations for each airport were developed by the Capacity Teams to be implemented when aircraft operations reached specified levels of demand. For further information on implementation plans, consult the *Airport Capacity Enhancement Plan* for each airport.

1. As of 2-1-93.



Legend

- Existing Runway
- Existing Taxiway/Apron
- Proposed Runway/Runway Extension
- Proposed Taxiway/Apron/Facility Improvements
- Buildings
- (5) Numbers are keyed to alternatives listed in Airport Project Summary

Note: Some buildings/structures may have been removed for clarity.

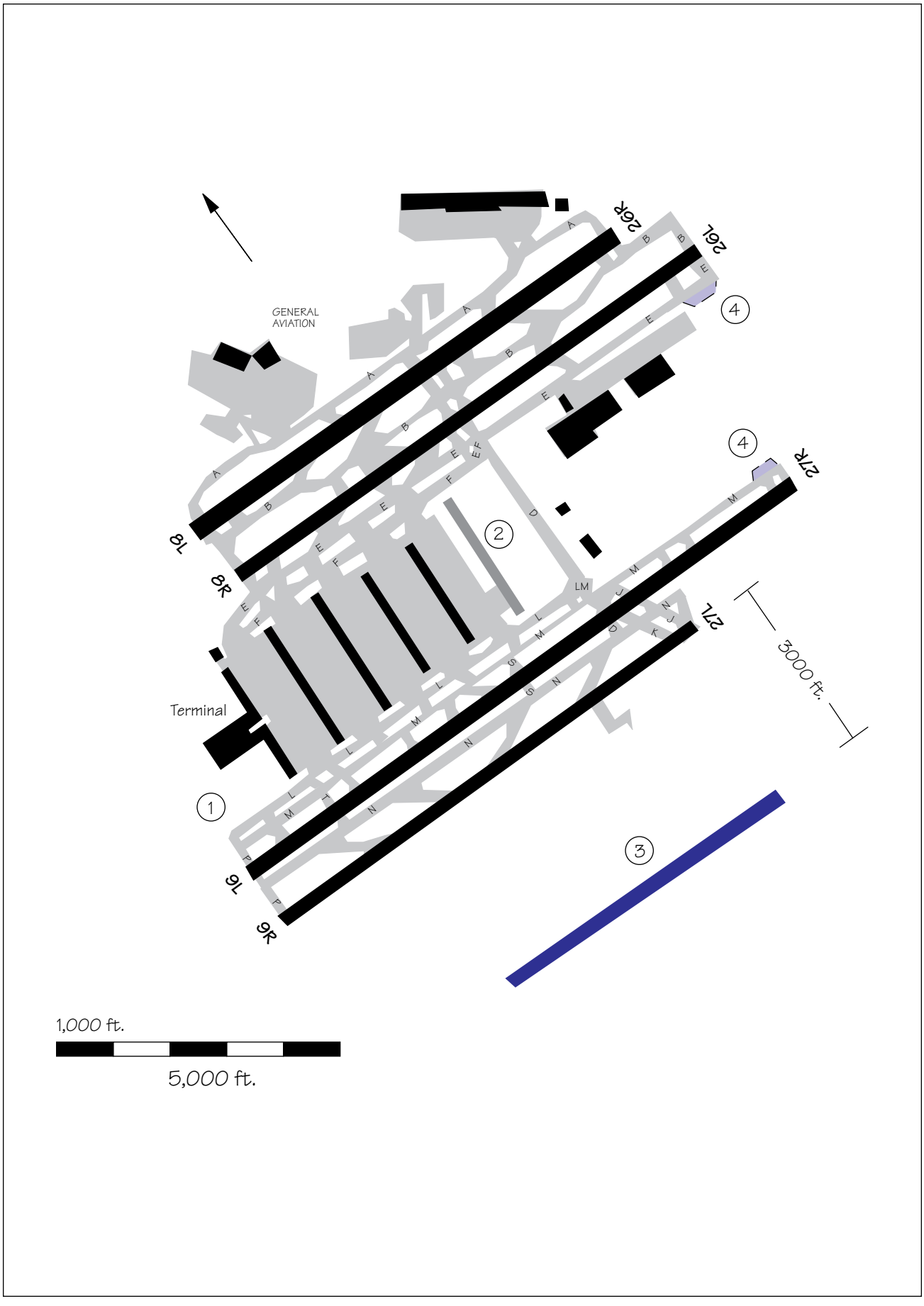
1,000 ft.

5,000 ft.

Completed

Ongoing

The following design teams were recently initiated and proposed alternatives had not been formulated at press time: Cleveland, Minneapolis, and Eastern Virginia.


GENERAL AVIATION
Terminal
LM
3000 ft.
1,000 ft.
5,000 ft.

Atlanta-Hartsfield International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. International concourse
2. Fifth concourse
3. Commuter/GA terminal and runway complex south of Runway 9R/27L
4. Three hold pads/bypass taxiways at end of departure runways
5. Taxiway C parallel to the west of Taxiway D

Facilities and Equipment Improvements

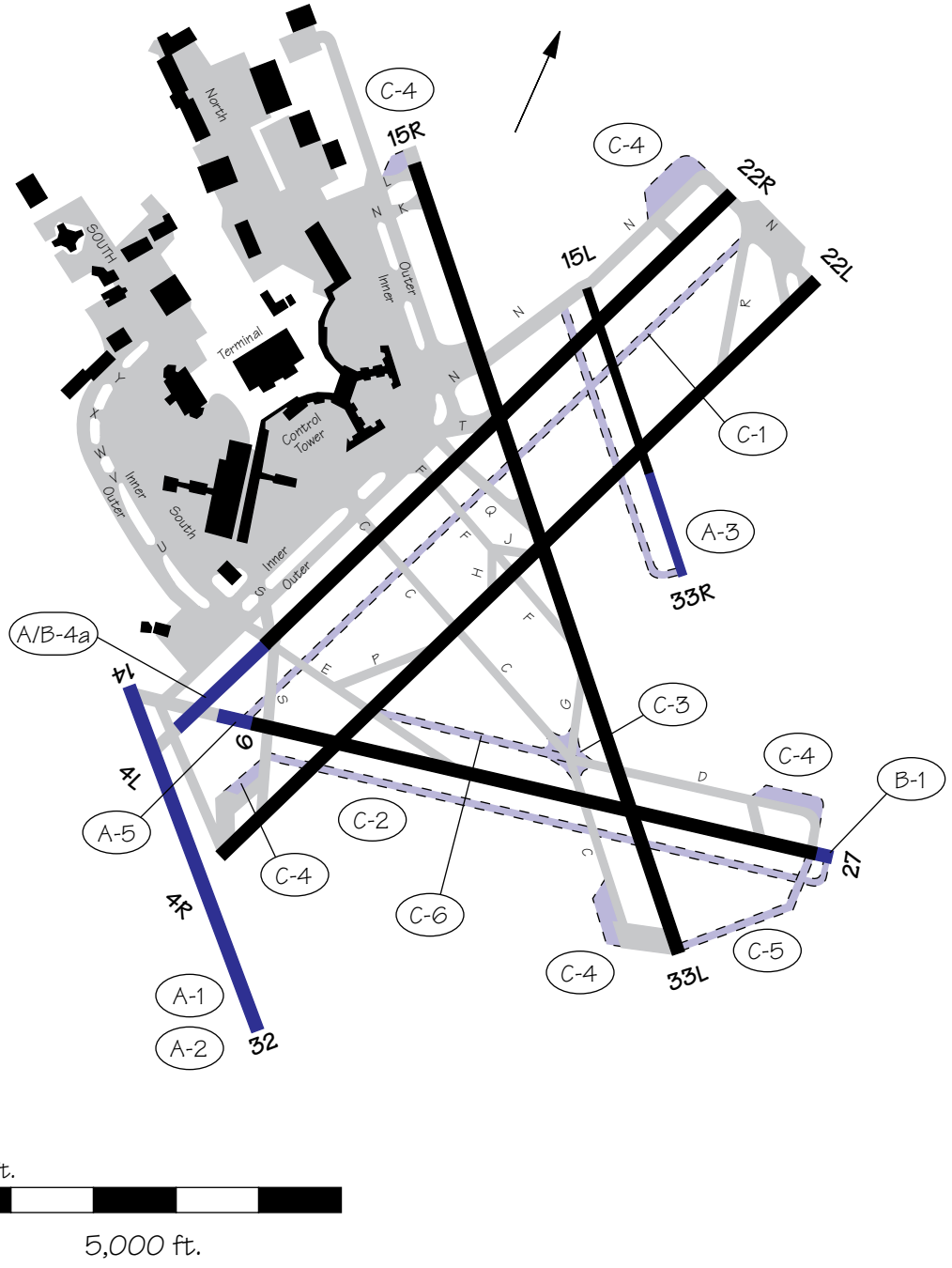
7. Expedite development and installation of wake vortex forecasting and avoidance systems
8. Upgrade NAVAIDs and approach lights on Runway 26R and 27L to Category II
9. Update terminal approach radar
10. Upgrade RVR system to CAT IIIB and ICAO standards
11. Install ASDE-3 with tracking
12. Install touchdown zone lights on Runway 27L
13. Precision Runway Monitor (PRM)
14. CAT III ILS

Operational Improvements

15. Reduce arrival separations to 2.5 nm
16. Enhance traffic management procedures

User Improvements

17. Depeak airline schedules within the hour


North
South
Terminal
Control Tower
Inner
Outer
Inner
Outer
Inner
Outer
C-4
15R
C-4
22R
15L
22L
C-1
A-3
33R
A/B-4a
14
9
4L
A-5
4R
A-1
A-2
32
C-4
C-2
C-6
C-3
C-4
B-1
27
C-5
C-4
33L
1,000 ft.
5,000 ft.

Boston Logan International Airport Capacity Design Team Project Summary

Recommendations

Strategy A: Separate the operation of smaller aircraft from large jet aircraft

A-1 New commuter Runway 14/32, unidirectional (with arrivals only on Runway 32)
A-2 New commuter Runway 14/32, bi-directional
A-3 Extend Runway 15L/33R to 3,500' with new taxiway
A-3a Combine alternatives A-1 and A-3
A-3b Combine alternatives A-2 and A-3
A-4/B-4 Removal of noise restrictions to arrivals on Runway 22R
A-5 400' westward extension of Runway 9 to permit commuters to land on Runway 9 and hold short of Runway 15R during daylight, VFR, dry, conditions
A-6/D-2 Use of MLS technology for high-angle commuter approaches to avoid wake turbulence, missed approach guidance off Runway 32, and offset approach courses for independent IFR descents into VFR conditions
A-7 Simultaneous LDA parallel "point-in-space" approaches to Runway 33L, circle to land Runway 4L in marginal IFR (IFR-I) and calm winds

Strategy B: Expand the number of runways on which jets can operate independently under VFR and IFR conditions

B-1 Extend Runway 27 200' to the east to allow landings holding short of Runway 22L in daylight, VFR, dry conditions
B-2 Simultaneous approaches to Runways 4R and 4L and Runways 22R and 22L in less than VFR-V conditions
B-3 Modify ATC procedures to allow simultaneous approaches to Runways 27 and 22L and to Runways 4L and 33L under IFR conditions
A-4/B-4 Removal of noise restrictions on Runway 4L departures
A-4a/B-4a Removal of noise restrictions on Runway 4L combined with an extension of Runway 4L to a new taxiway B
B-5 Side-step approaches from Runway 4R to Runway 4L
B-6 Use of fan headings for aircraft departing Runways 22L and 22R
B-7 Use of hold-short procedures under VFR, wet conditions for turbo-jet aircraft on Runway 15R (hold short of 09), 22L (hold short of 27), and 33L (hold short of 4L)

Strategy C: Improve taxiway circulation to expedite ground movement and improve departure sequencing

C-1 New parallel taxiway between Runways 4L/22R and 4R/22L
C-2 New south exit parallel taxiway for Runway 27
C-3 Add fillets at intersection of taxiways D and C with Runway 15R/33L
C-4 Add staging areas at the ends of Runways 15R/33L, 27, 4R, and 22R, and at the intersection of taxiway G with Runway 33L
C-5 New taxiway from the end of Runway 27 to the end of Runway 33L
C-6 Extend taxiway D to Runway 4R/22L

Strategy D: Lower minimum visibility requirements for IFR approaches

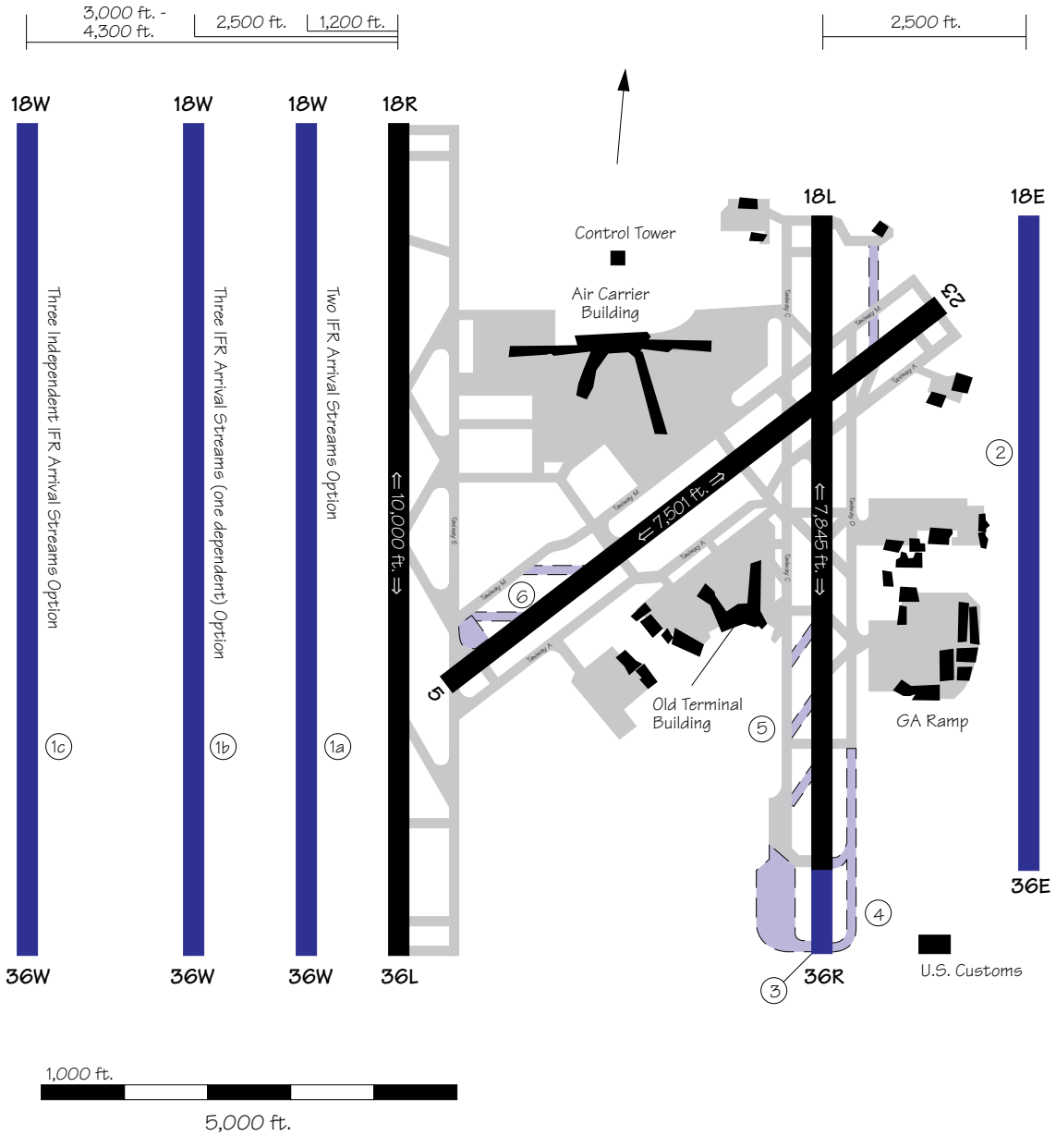
D-1 Install CAT II/III ILS on Runways 15R, 22L, 27 and 33L
D-2 Use of Microwave Landing System (MLS) technology
D-3 Reduce minimums to 250' and 3/4 mile on Runway 22L for Category I approaches

Strategy E: Adopt policies which manage demand so that existing and future demand is used more efficiently

E-1 Increase the percentage of large jet aircraft in the fleet mix
E-2 Redistribute airline schedules within the hour

Strategy F: Develop more efficient use of the airspace around Logan and Boston Approach Control

F-1 Improve metering, spacing, and segregation of heavy jets
F-2 Use WVAS and VAS to decrease separation standards


3,000 ft. - 4,300 ft.
2,500 ft.
1,200 ft.
2,500 ft.
18W
18W
18W
18R
18L
18E
Three Independent IFR Arrival Streams Option
Three IFR Arrival Streams (one dependent) Option
Two IFR Arrival Streams Option
⇐ 10,000 ft. ⇒
⇐ 7501 ft. ⇒
⇐ 7,845 ft. ⇒
Control Tower
Air Carrier Building
Old Terminal Building
GA Ramp
U.S. Customs
23
5
1c
1b
1a
6
2
5
4
3
36W
36W
36W
36L
36R
36E
1,000 ft.
5,000 ft.

Charlotte/Douglas International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Build third parallel runway, Runway 18W/36W
   1a. Two IFR arrival streams
   1b. Three IFR arrival streams (one dependent)
   1c. Three IFR independent arrival streams
2. Build fourth parallel runway, Runway 18E/36E
3. Extend Runway 36R further south
4. Extend Taxiway D full Runway 18L/36R length
5. Build angled exits off Runway 18L
6. Build angled exits off Runway 23
7. Construct departure sequencing pads at runway ends
8. Install centerline lights on Runway 5

Facilities and Equipment Improvements

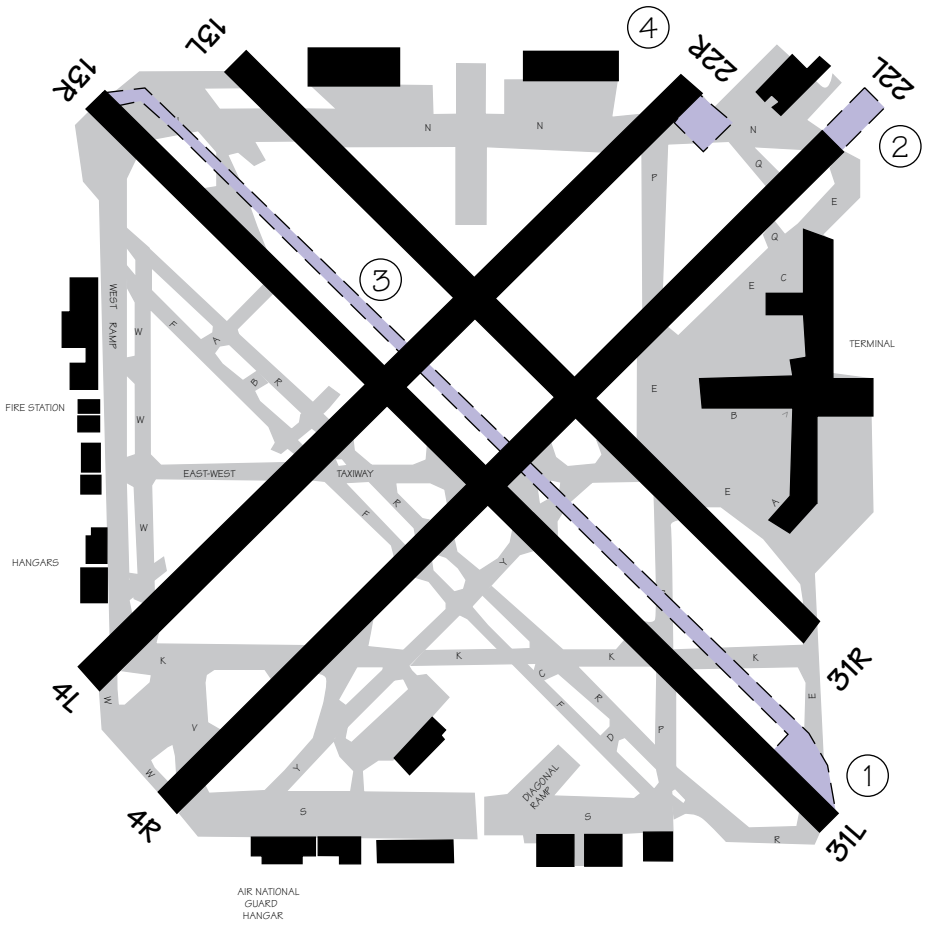
9. Install Category I ILS on Runway 23
10. Install Category II/III ILS on Runway 18R
11. Install Category II/III ILS on Runway 18L
12. Install Category II/III ILS on Runway 36R
13. Install Airport Surface Detection Equipment (ASDE)
14. Expand the Charlotte TRACON and ARTS-IIIA
15. Acquire the Aircraft Situation Display (ASD)
16. Install Precision Runway Monitor (PRM)
17. Install approach light system on Runway 18L and Runway 23

Operational Improvements

18. Waiver to conduct intersecting runway operations on wet runways
19. Increase Charlotte tower satellite control positions for departures
20. Identify departure restrictions

Other Improvements

21. Improve reliever airports (reduce GA by 50%)


13R
13L
4
22R
22L
2
3
WEST RAMP
TERMINAL
FIRE STATION
EAST-WEST
TAXIWAY
HANGARS
4L
31R
1
4R
31L
DIAGONAL RAMP
AIR NATIONAL GUARD HANGAR
1,000 ft.
5,000 ft.

Chicago Midway Airport
Capacity Design Team Project Summary

Recommendations

Airfield Improvements

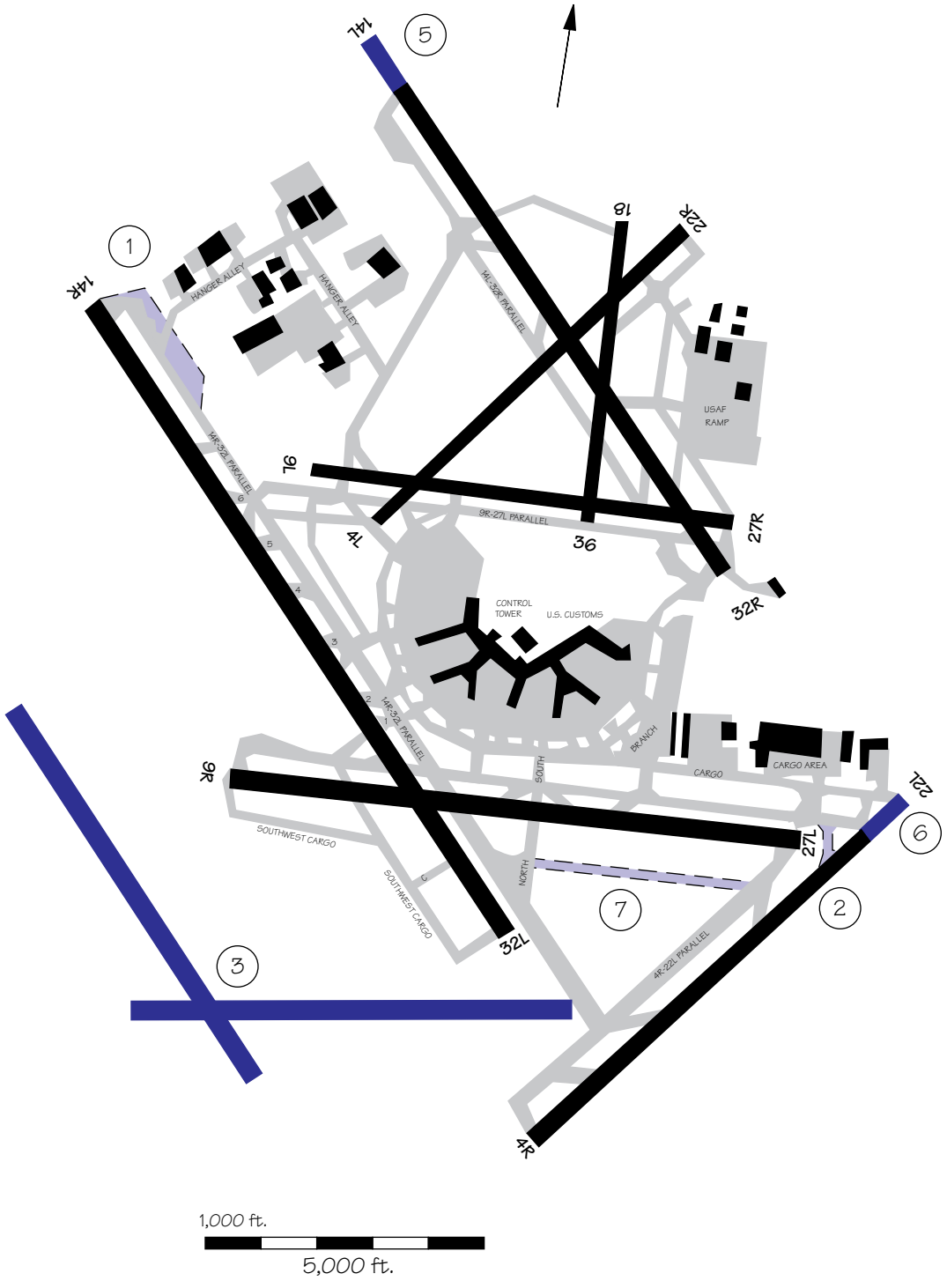
1. Runway 31L hold pad
2. Extension to Runway 22L
3. Parallel taxiway between Runways 13R/31L and 13L/31R
4. Runway 22L hold pad
5. Expand apron/gate area
6. Rehabilitation of Runway 13L/31R
7. Reduce arrival minimums for Runways 4R and 31L
8. Commission general aviation Runway 13/31

Air Traffic Control Operational Improvements

9. Intersecting runway operations
10. Silent release departures
11. Dual approach procedures to Runways 31L, 31R, 4L, and 4R
12. Straight-in approach to Runway 22L
13. Meig's instrument approach capability

Research/New Technology Improvements

1. Reduce/eliminate miles-in-trail restrictions
2. Examine flow control procedures
3. Reduce aircraft separation criteria
4. Examine Chicago airspace organization


14L
5
1
14R
HANGER ALLEY
HANGER ALLEY
14L-32R PARALLEL
18
22R
USAF
RAMP
14R-32L PARALLEL
9L
9R-27L PARALLEL
4L
36
27R
32R
CONTROL
TOWER
U.S. CUSTOMS
14R-32L PARALLEL
9R
SOUTH
BRANCH
CARGO
CARGO AREA
22L
6
SOUTHWEST CARGO
27L
NORTH
SOUTHWEST CARGO
7
2
32L
3
4R-22L PARALLEL
1,000 ft.
5,000 ft.

Chicago O'Hare International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

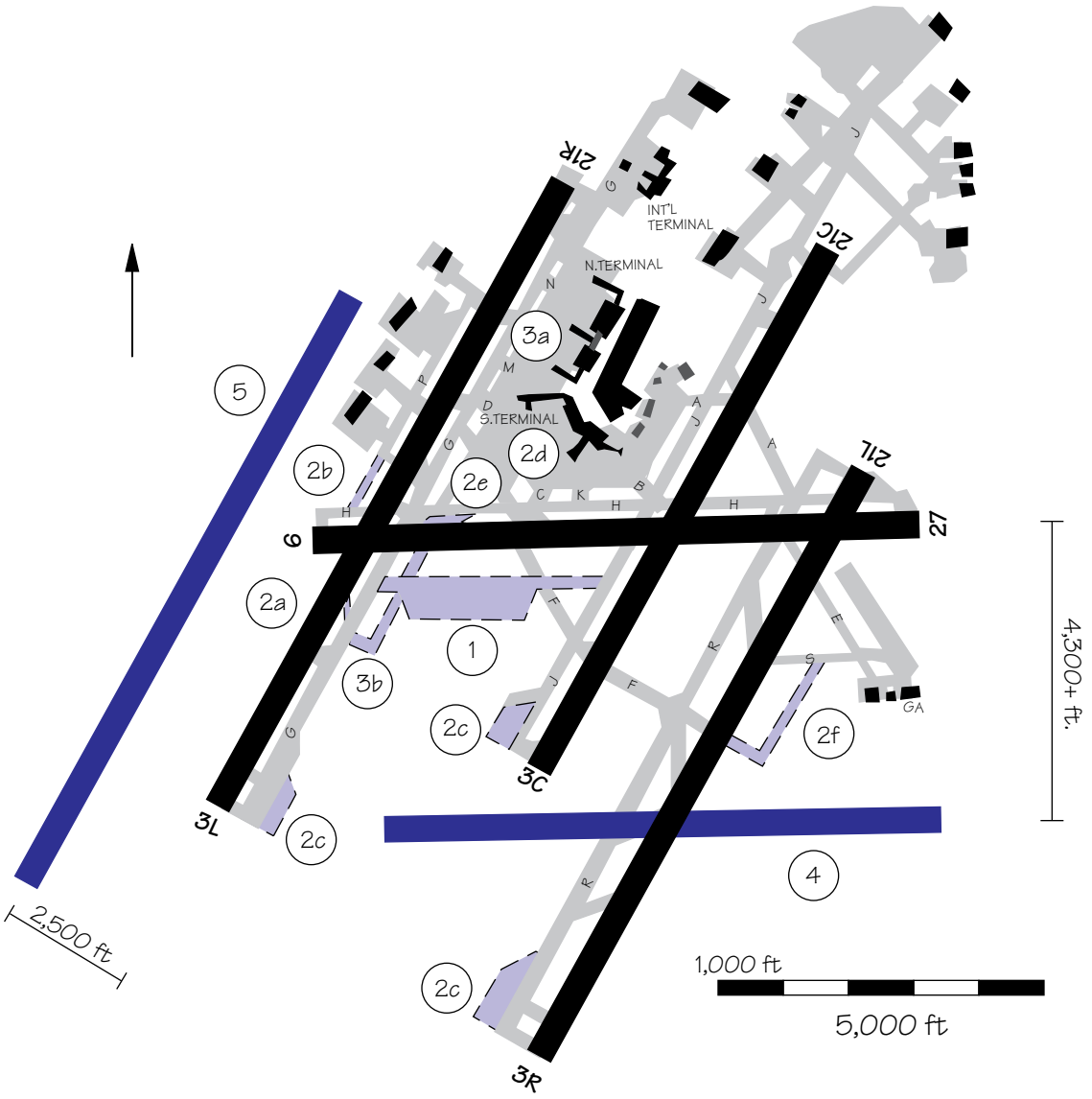
1. Large flow-through aircraft holding areas ("Chicago hold pads")
2. Runway 4R angled exit
3. New Runways 14/32 and 9/27
4. Northward relocation of Runways 9L/27R and 4L/22R
5. Extension to Runway 14L
6. Extension to Runway 22L
7. Southern Runway 9R/27L parallel taxiway
8. Additional Category II/III approach capability

Air Traffic Control Operational Improvements

9. Triple converging instrument approach procedures
10. Intersecting wet runway operations on Runway 14L
11. Independent triple IFR approach procedures

Research/New Technology Improvements

1. Reduce/eliminate miles-in-trail restrictions
2. Examine flow control procedures
3. Reduce aircraft separation criteria
4. Examine Chicago airspace organization


21R
21C
21L
INT'L TERMINAL
N.TERMINAL
S.TERMINAL
3a
2d
2e
2b
5
9
27
2a
1
3b
2c
2f
GA
3L
3C
3R
4
2,500 ft
4,300+ ft.
1,000 ft
5,000 ft

Detroit Metropolitan Wayne County Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Holding apron and taxiway south
2. Runway and taxiway improvements
   - 2a. High-speed exit taxiway - Runway 21R to Taxiway Y
   - 2b. Extend Taxiway Z to Taxiway V
   - 2c. Construct and expand holding aprons at Runways 3C, 3L, and 3R
   - 2d. Extend inner taxiway parallel to Taxiway H
   - 2e. Construct exit taxiway - Runway 9/27 to Taxiway H
   - 2f. Construct Taxiway S to east GA area
3. Terminal improvements
   - 3a. Terminal expansion
   - 3b. Mid-field terminal
4. Construct independent crosswind Runway 9R/27L
5. Construct independent fourth north/south runway

Facilities and Equipment Improvements

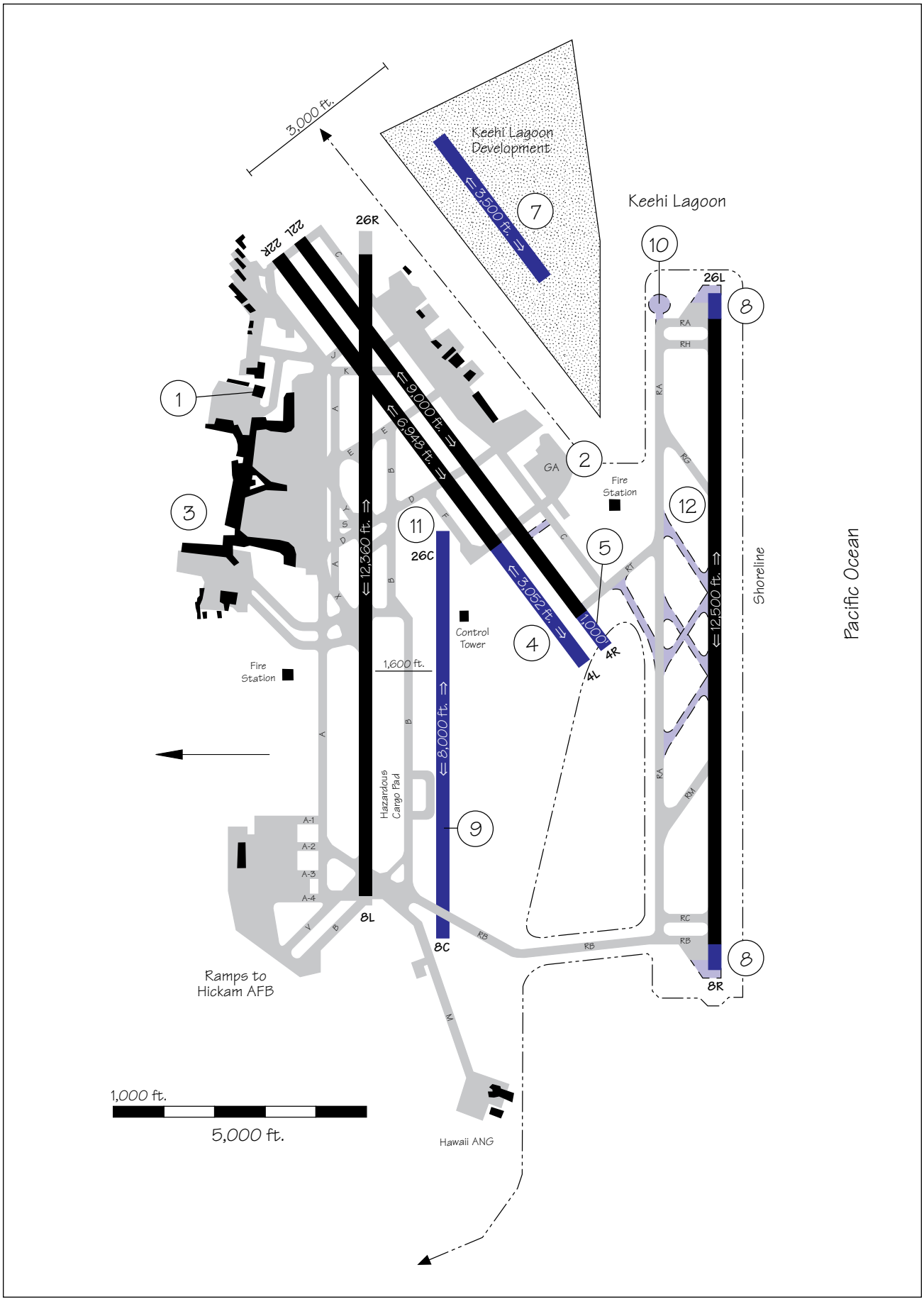
7. Upgrades on Runway 3C
   - 7a. ILS, MLS, and approach lights on existing Runway 3C
   - 7b. RVR for existing Runway 3C
8. ASDE
9. Terminal Doppler Weather Radar (TDWR)
11. RVR and centerline lights on Runway 27
12. Expedite development and installation of wake vortex forecasting and avoidance system
13. Install an airport VOR

Air Traffic Control Improvements

14. Independent converging VFR/IFR approaches to Runways 27 and 21R, hold short of Runway 21R
15. Add controller positions, establish STAR routes, relocate MOTER intersection
16. Use departure corridors
17. Realign Cleveland Center sector airspace
18. Expand tower en route program
19. Reduce arrival longitudinal separation to 2.5 nm
    - 19a. Runway occupancy time reduced 10%
    - 19b. Runway occupancy time reduced 20%
    - 19c. Runway occupancy time reduced 30%

User Improvements

20. Relocate general aviation traffic users
21. More uniform distribution of scheduled operations within the hour


3,000 ft.
Keehi Lagoon Development
⇐ 3,500 ft. ⇒
7
Keehi Lagoon
10
26L
8
22L
22R
26R
RA
RH
1
9,000 ft. ⇒
6,948 ft. ⇒
2
GA
Fire Station
12
3
11
26C
5
⇐ 12,360 ft. ⇒
⇐ 3,052 ft. ⇒
1,000
4
4R
4L
Control Tower
Shoreline
⇐ 12,500 ft. ⇒
Pacific Ocean
Fire Station
1,600 ft.
⇐ 8,000 ft. ⇒
9
Hazardous Cargo Pad
A-1
A-2
A-3
A-4
8L
8C
RB
RC
RM
8R
Ramps to Hickam AFB
1,000 ft.
5,000 ft.
Hawaii ANG

Honolulu International Airport
Capacity Design Team Project Summary

Recommendations
Airfield Improvements

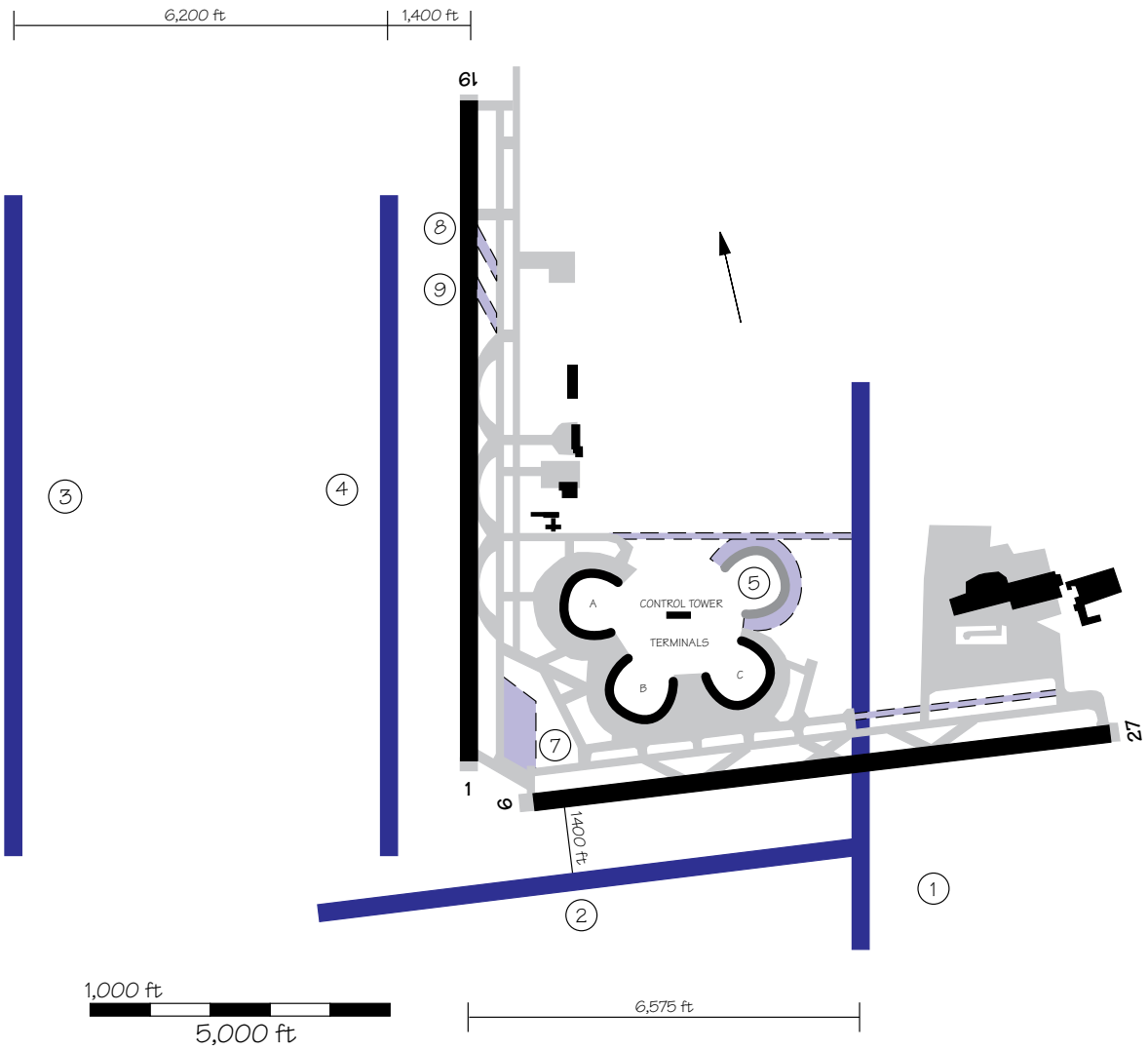
1. Effect of new international terminal
2. Relocate and consolidate general aviation (GA) on the south side
3. Relocate commuter terminal
4. Extend Runway 4L/22R to the southwest to 10,000 feet
5. Extend Runway 4R/22L to the southwest to 10,000 feet
6. Extend both Runway 4L/22Rand Runway 4R/22L to the southwest to 10,000 feet
7. Construct new GA runway in Keehi Lagoon
8. Extend Runway 8R/26L 1,000 feet
9. Construct new Runway 8C/26C
10. Construct engine run-up pad at east end of Taxiway RA
11. Construct arrival holding area
12. Construct angled exits on Runways 4R, 8L, and 26L

Facilities and Equipment Improvements

13. Install Category II ILS on Runway 8L
14. Install Microwave Landing System (MLS) on Runways 8L, 8R, and 26L

Operational Improvements

15. Increase use of Runway 8R for arrivals
16. Effect of noise abatement procedures
17. Distribute traffic more uniformly within the hour
18. Relocate general aviation (GA) to reliever airports
    - 18a. Relocate 50% of GA
    - 18b. Relocate 100% of GA
19. Relocate military aircraft
    - 19a. Relocate 50% of military aircraft
    - 19b. Relocate 100% of military aircraft
    - 19c. Increase military to 150% of current level and relocate 100 % ofGA


6,200 ft
1,400 ft
19
1
8
9
3
4
5
CONTROL TOWER
TERMINALS
A
B
C
7
27
9
1400 ft
2
1
1,000 ft
5,000 ft
6,575 ft

Kansas City International Airport
Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Independent 9,500' Runway 1R/19L
2. Dependent 10,000' parallel Runway 9R/27L
3. Independent 10,000' parallel Runway 18R/36L
4. Dependent 10,000' parallel Runway 18L/36R
5. Add fourth terminal
6. Extend Taxiways B and D to Taxiway H
7. Build holding aprons west of Terminal B
8. High speed exit at A2 for Runway 1L
9. High speed exit at A3 for Runway 19R
10. Extend Taxiway B5 to Runway 19R for GA
11. High speed exit between C5 and C7 for Runway 27R

Facilities and Equipment Improvements

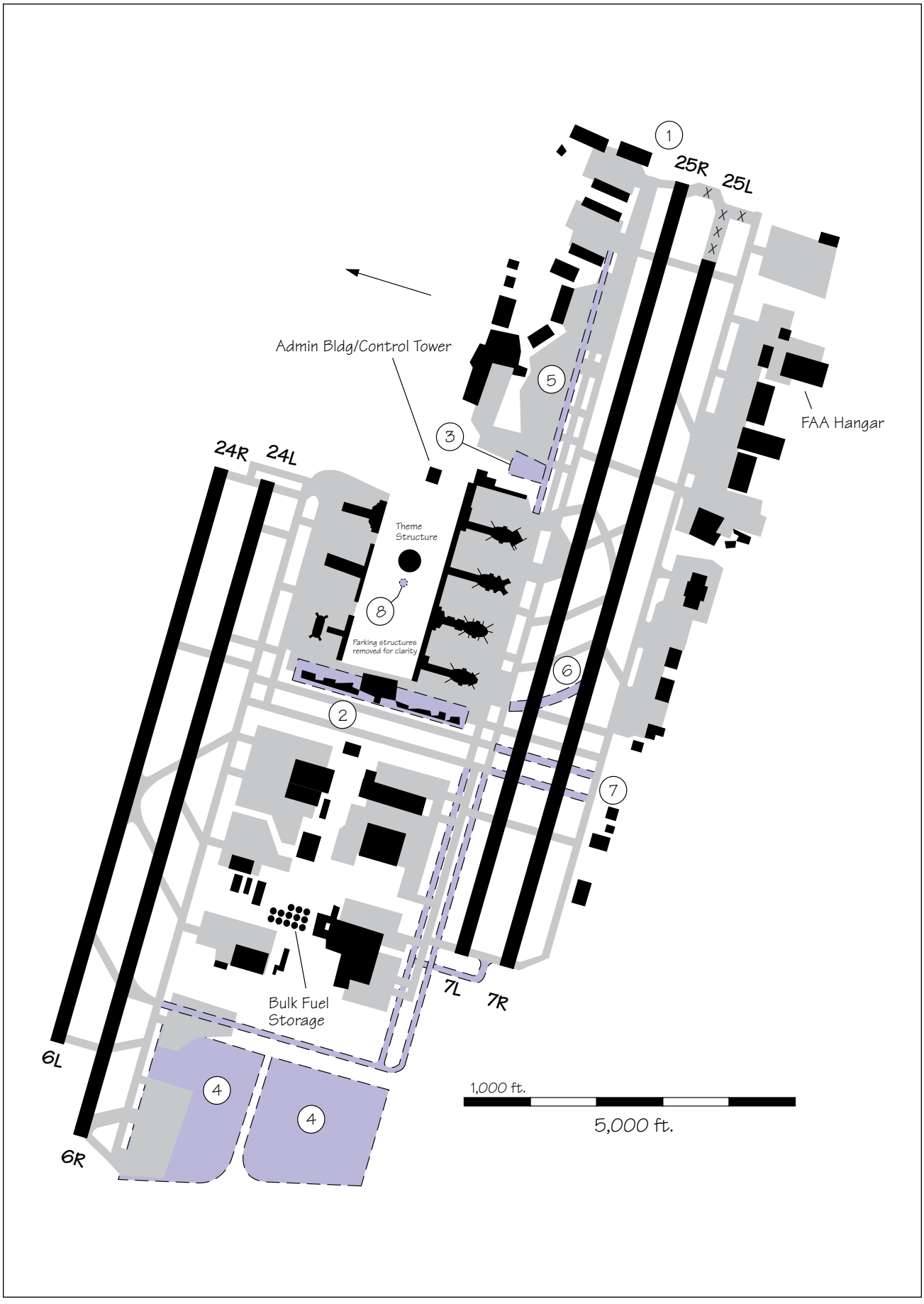
12. CAT III ILS on Runway 1R
13. CAT I ILS on Runway 19L
14. Install ILS/MLS for Runway 27R
15. DME for Runways 1L/19R and 1R/19L
16. RVR for Runway 1R/19L
17. Upgrade Runway 1L ILS to CAT III
18. Benefit of ASDE

Operational Improvements

19. Simultaneous converging instrument approaches
20. Impact of terminal service road
21. Impact of perimeter service road
22. Effect of noise restrictions
23. Effect of ARSA separations within the TCA

User Improvements

24. Uniformly distribute scheduled commercial operations within the hour
25. Reduce ROTs through pilot and controller education
26. Reduce longitudinal separations to 2.5 nm


1
25R
25L
Admin Bldg/Control Tower
5
FAA Hangar
3
24R
24L
Theme Structure
8
Parking structures removed for clarity
6
2
7
7L
7R
Bulk Fuel Storage
6L
4
4
6R
1,000 ft.
5,000 ft.

Los Angeles International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

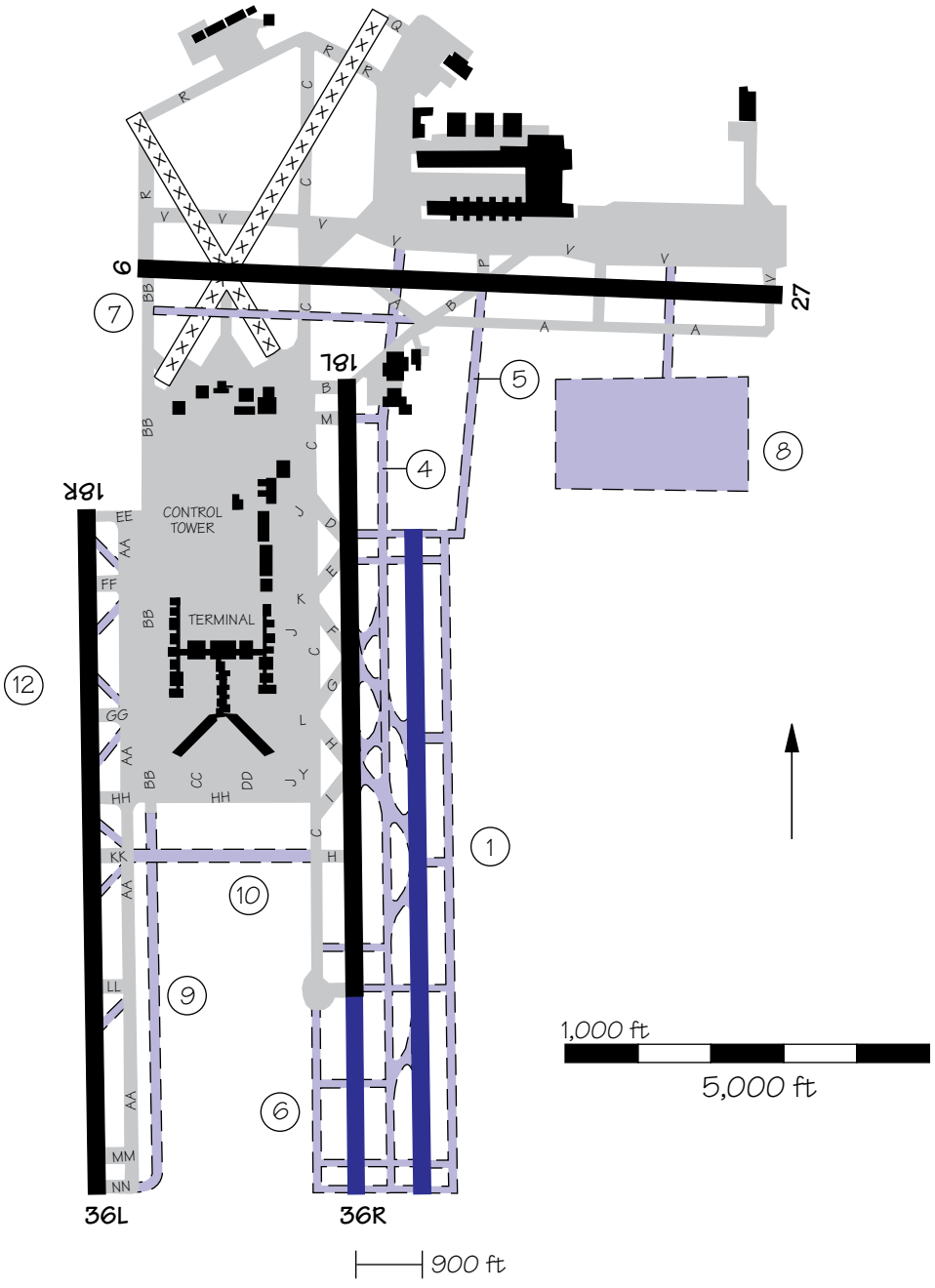
1. Construct departure pads (staging areas) at ends of runways
2. Construct new gates west side of Tom Bradley International Terminal (TBIT)
3. Construct 11-gate domestic terminal (east of Sepulveda) and 24-gate international terminal on the west end
4. West end development
   - 4a. Construct 24 remote gates (no terminal) for domestic and international operations
   - 4b. Construct 24-gate passenger terminal for domestic and/or international operations
5. Extend Taxiway K to the east
6. Construct high-speed Taxiway 43
7. Extend Taxiways 48 and 49 to Taxiway F

Facilities and Equipment Improvements

8. Construct new air traffic control tower
9. Upgrade ILS on Runway 25L to CAT III

Procedures Improvements

10. Taxi aircraft versus towing from remote parking areas to gates
11. Restructure Los Angeles Basin airspace


9
27
18L
18R
36L
36R
CONTROL TOWER
TERMINAL
1
4
5
6
7
8
9
10
12
1,000 ft
5,000 ft
900 ft

Memphis International Airport
Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Construct Runway 18E/36E, dual departures
2. Construct Runway 18E/36E, triple departures in VFR-1
3. Construct Runway 18E/36E, triple departures in all weather conditions (waiver required)
4. Extend inner parallel taxiway north to Taxiway V
5. Extend outer Taxiway P north to Taxiway V
6. Extend Runway 18L/36R south
7. Extend Taxiway A from B to BB
8. Large freight ramp, east of Runway 18E, south of Runway 27
9. Extend Taxiway BB to approach end of Runway 36L
10. New crossover Taxiway KK, south of Taxiway HH
11. Terminal expansion
12. Angled exits on Runway 18R/36L (reduce occupancy times by 10%)

Facility and Equipment Improvements

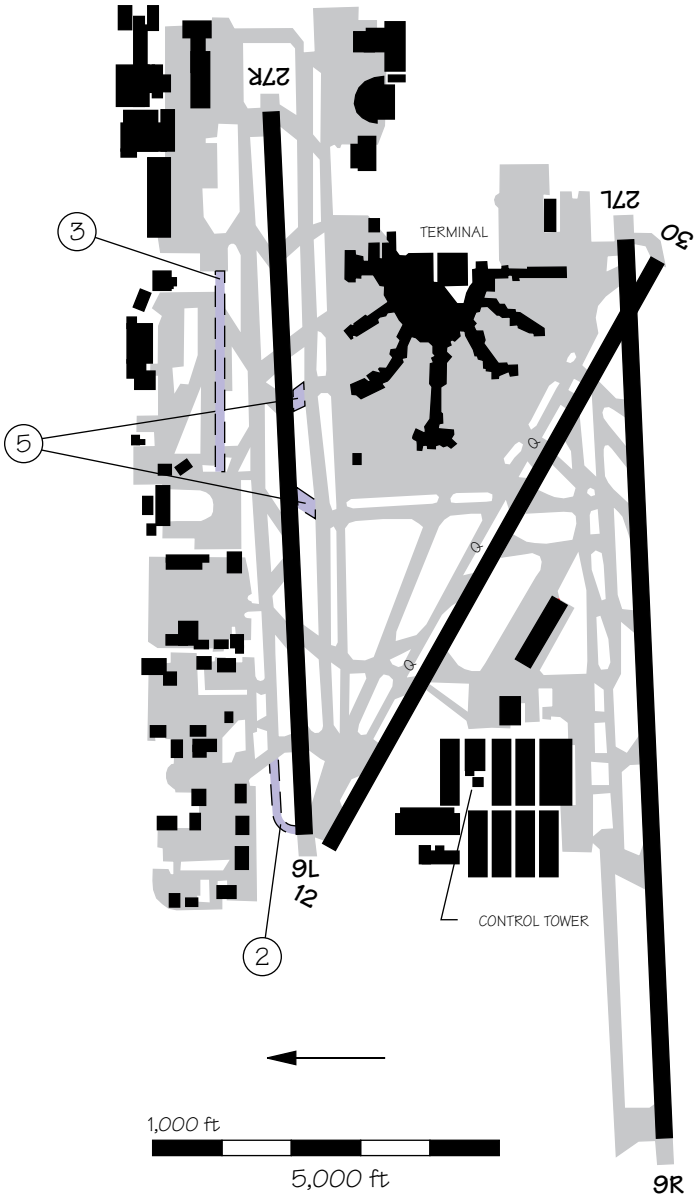
13. CAT II/III ILS on Runway 36R
14. CAT II/III ILS on Runway 36E
15. CAT II/III ILS on Runways 18R, 18L, and 18E
16. Install Airport Surface Detection Equipment (ASDE)
17. Re-route high altitude traffic away from MEM VORTAC

Operational Improvements

18. Reduce longitudinal spacing to 2.5 nm between similar class, non-heavy arrivals
19. Reduce lateral spacing (simultaneous ILS approaches to existing parallels)
20. Small aircraft hold short of Runways 3/21 and 15/33 when landing Runway 27 (regardless of wind)
21. 1.5 nm staggered ILS approach to existing parallels
22. Relief from airspace criteria

User Improvements

23. Reduce small-slow aircraft by 10%; by 25%
24. Uniformly distribute traffic within the hour
25. Increase GA forecast by 20%
26. Relocate Air Guard off airport


27R
27L
30
TERMINAL
3
5
16L
12
2
CONTROL TOWER
1,000 ft
5,000 ft
9R

Miami International Airport
Capacity Design Team Project Summary

Recommendations

Airfield Improvements

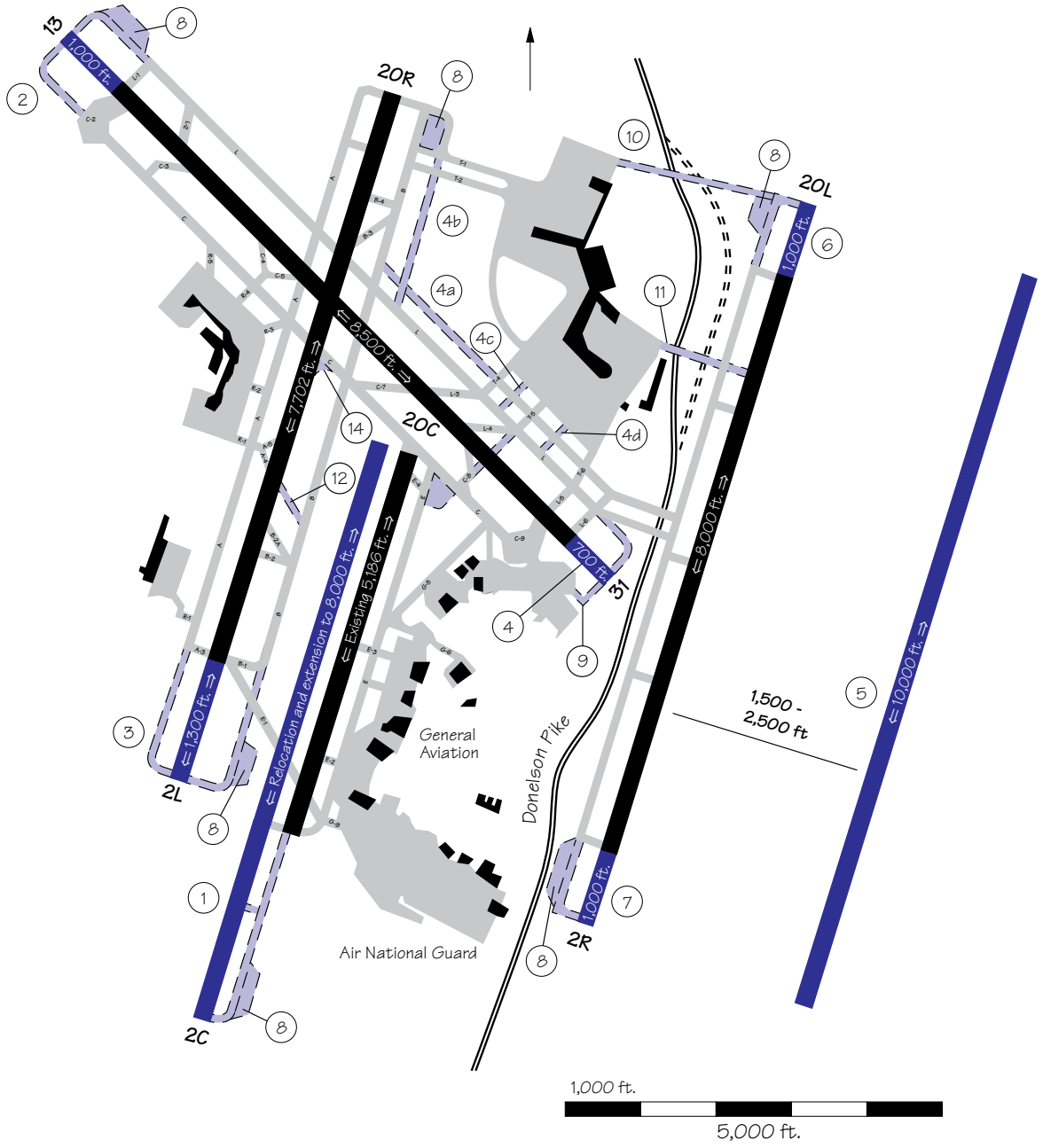
1. Dual taxiway around Concourse H (remove 2 end gates)
2. Extend Taxiway L to Runway 9L end
3. Construct new partial dual Taxiway K
4. Develop improved exits for Runway 9L/27R northside
   4a. Strengthen/reconstruct Runway 9L/27R
5. Improve Exits M4 and M5 on Runway 9L/27R

Facility and Equipment Improvements

6. CAT II on Runway 9L
7. CAT II on Runway 9R
8. Install touchdown and midpoint RVRs on Runway 9R
10. Glideslope, MALSR, and middle marker on Runway 30
11. ASDE
12. Benefits of MLS
13. Install midpoint and rollout RVRs on Runway 9L

Operational Improvements

14. Independent converging IFR approaches to Runways 12 and 9R
15. Independent converging IFR approaches to Runways 27R and 30
16. 2.5 mile in-trail longitudinal approach separation (IFR)


13
1,000 ft.
20R
⇐ 7,702 ft. ⇒
⇐ 8,500 ft. ⇒
20C
700 ft.
31
20L
1,000 ft.
⇐ 8,000 ft. ⇒
⇐ 10,000 ft. ⇒
1,500 - 2,500 ft
⇐ Relocation and extension to 8,000 ft. ⇒
⇐ Existing 5,186 ft. ⇒
⇐ 1,300 ft. ⇒
2L
2C
2R
1,000 ft.
General Aviation
Donelson Pike
Air National Guard
1
2
3
4
4a
4b
4c
4d
5
6
7
8
9
10
11
12
14
1,000 ft.
5,000 ft.

Nashville International Airport
Capacity Design Team Project Summary

Recommendations

Airfield Improvements

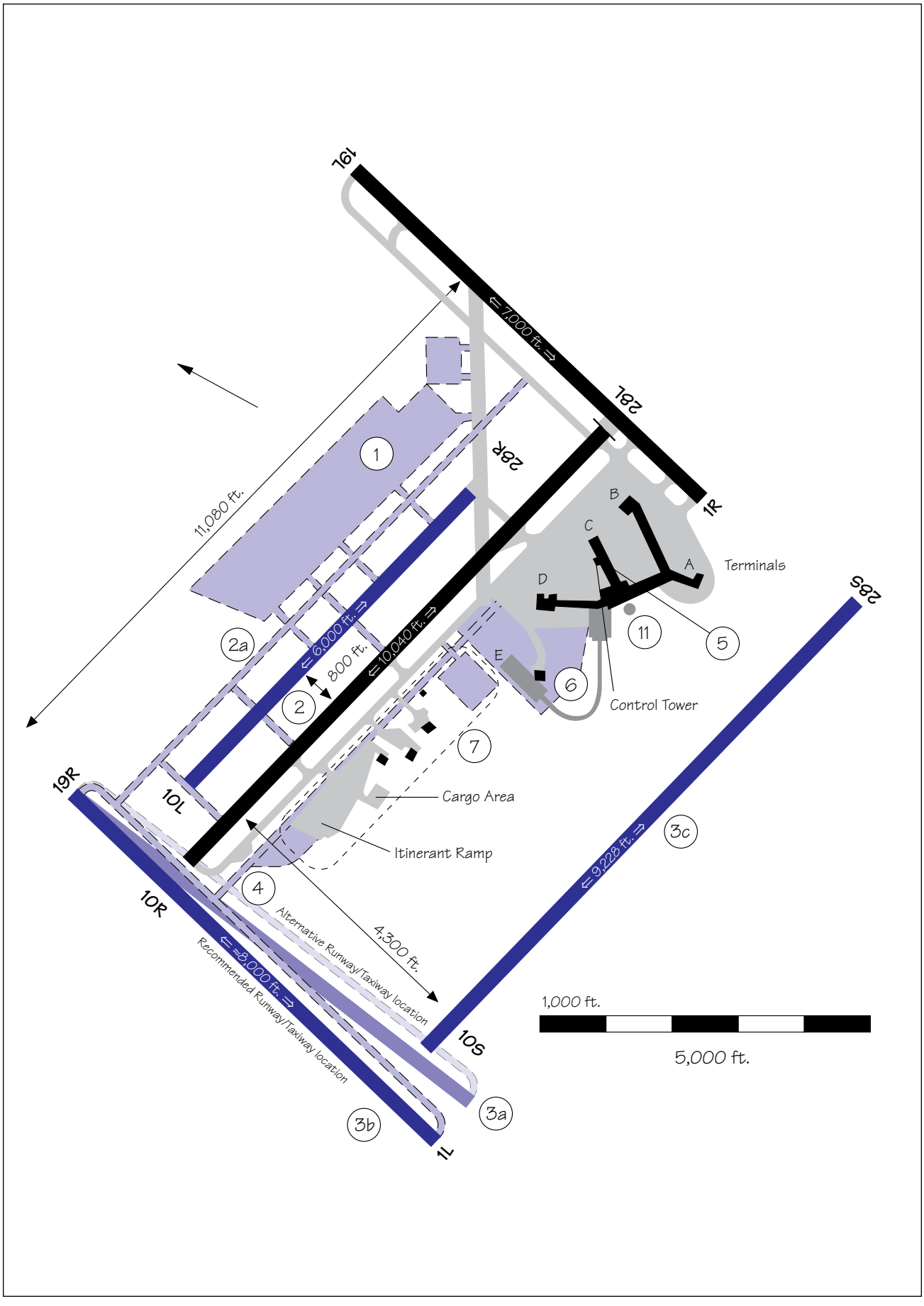
1. Relocate Runway 2C and extend to 8,000 ft.
2. Extend Runway 13 to the northwest
3. Extend Runway 2L 1,300 ft. or more to the south
4. Improve terminal taxiways and ramp
   - 4a. Extend Taxiway I
   - 4b. Extend Taxiway B
   - 4c. Construct dual lane at Taxiway T-4
   - 4d. Construct dual lane at Taxiway T-6
5. Construct new Runway 2E/20E 1,500 to 3,000 ft. east of existing Runway 2R/20L
   - 5a. Less than 2,500 ft. east of Runway 2R/20L
   - 5b. 2,500 ft. east of Runway 2R/20L (dependent)
6. Extend existing Runway 20L 1,000 ft. north
7. Extend existing Runway 2R 1,000 ft. south
8. Construct holding (departure sequencing) pads on all runway ends (bypass capability)
9. Construct taxiway from GA area to Runway 31 departure end
10. Construct crossover taxiway from ramp to Runway 20L
11. Construct connecting taxiway from Concourse D to Runway 2R/20L
12. Construct new exit for commuters east off Runway 20R at 5,000 ft.
13. Expand existing terminal
14. Round off fillet at Taxiway C and Runway 2L

Facilities and Equipment Improvements

15. Upgrade ILS on all existing and future runways
16. Install wake vortex advisory system

Operational Improvements

17. Encourage GA use of reliever airports
18. Conduct IFR dependent converging approaches to Runways 13 and 20L
19. Conduct an airspace capacity design project and re-structure terminal and en route airspace
    - 19a. Evaluate airspace restrictions
    - 19b. Revise low-altitude airway structure
20. Establish a terminal control area (TCA)


19L
⇐ 7,000 ft. ⇒
28L
28R
1R
11,080 ft.
1
B
C
A
D
Terminals
E
11
5
6
Control Tower
2a
⇐ 6,000 ft. ⇒
800 ft.
⇐ 10,040 ft. ⇒
2
7
28S
19R
10L
Cargo Area
3c
Itinerant Ramp
⇐ 9,228 ft. ⇒
4
10R
Alternative Runway/Taxiway location
4,300 ft.
⇐ 8,000 ft. ⇒
Recommended Runway/Taxiway location
10S
1,000 ft.
5,000 ft.
3a
3b
1L

New Orleans International Airport Capacity Design Team Project Summaries

Recommendations

Airfield Improvements

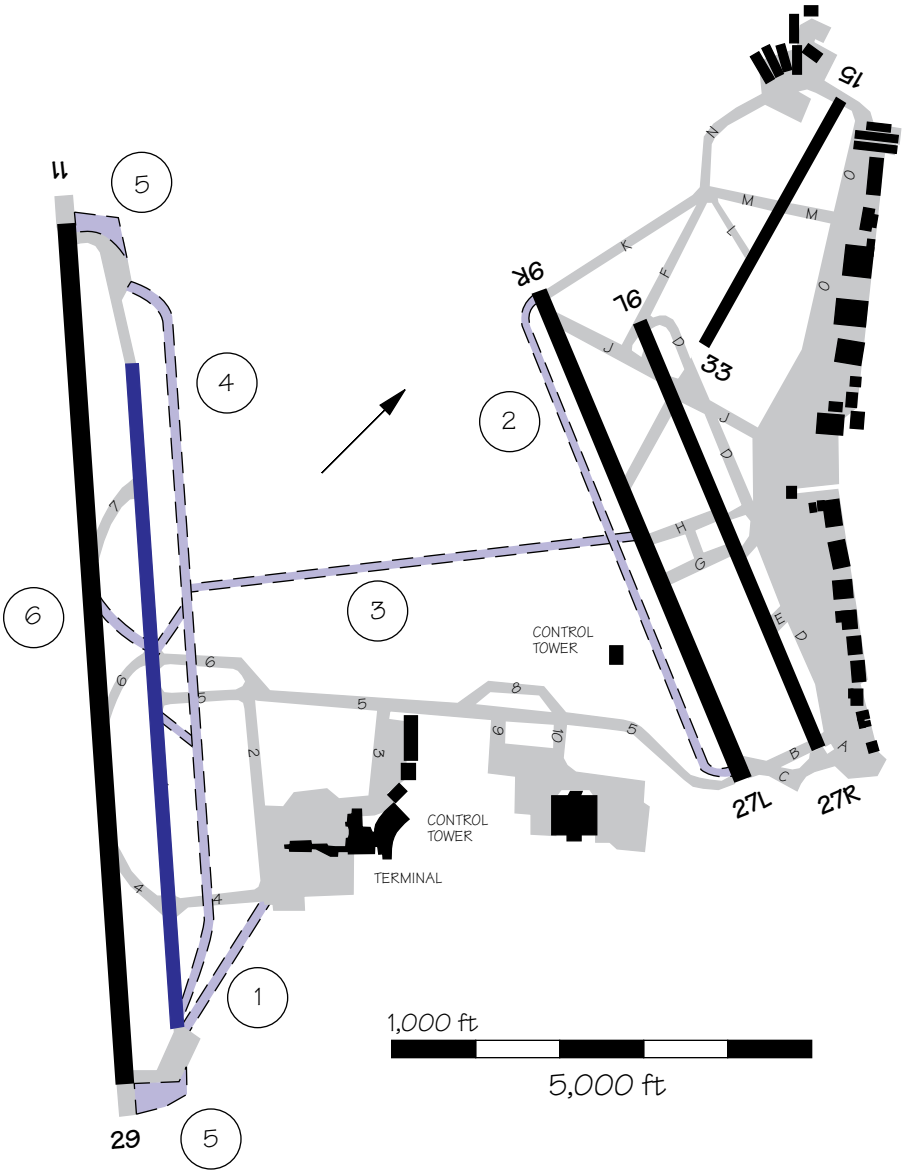
1. Construct new general aviation (GA) complex and east/west taxiway on north side
2. Convert north parallel east/west taxiway into new commuter/GA Runway 10L/28R
   2a. Construct parallel taxiway north of Runway 10L/28R
3. Construct new air carrier runway
   3a. Construct dependent non-parallel Runway 1L/19R
   3b. Construct independent parallel Runway 1L/19R
   3c. Construct independent parallel Runway 10S/28S
4. Construct east/west dual taxiway south of Runway 10R/28L
5. Construct new international and domestic gates and renovate one gate on Concourse C
6. Construct new Concourse E (20 gates) for air carrier operations
7. Develop air cargo complex and associated aprons
   7a. Develop Area 1 — Stage I east air cargo apron
   7b. Develop Area 2 — existing and south-of-existing GA areas
   7c. Develop Area 3 — Stage II east air cargo apron
   7d. Develop Area 4 — west air cargo apron
8. Construct perimeter road
9. Study requirement for new airport

Facilities and Equipment Improvements

10a. Move VORTAC from current location in lake, possibly to New Orleans International Airport
10b. Install additional VOR
11. Construct new airport traffic control tower (ATCT)

Operational Improvements

12. Effects of noise constraints
13. Develop and implement converging instrument approaches
    13a. "TERPS plus 3" approach procedure to Runways 10R and 19L and Runways 10R and 1R
    13b. Dependent IFR approaches to Runways 10R and 19L and Runways 10R and 1R
14. Use 2.5 nm spacing between similar class, non-heavy aircraft
15. Conduct an airspace capacity design project and restructure terminal airspace
16. Study effects of existing public-use heliport
17. Enhance GA reliever airports
    17a. Reduce GA traffic by 25%
    17b. Reduce GA traffic by 50%
    17c. Reduce GA traffic by 75%


11
5
4
2
9R
9L
15
33
6
3
CONTROL TOWER
CONTROL TOWER
TERMINAL
27L
27R
1
29
5
1,000 ft
5,000 ft

Oakland International Airport
Capacity Design Team Project Summary

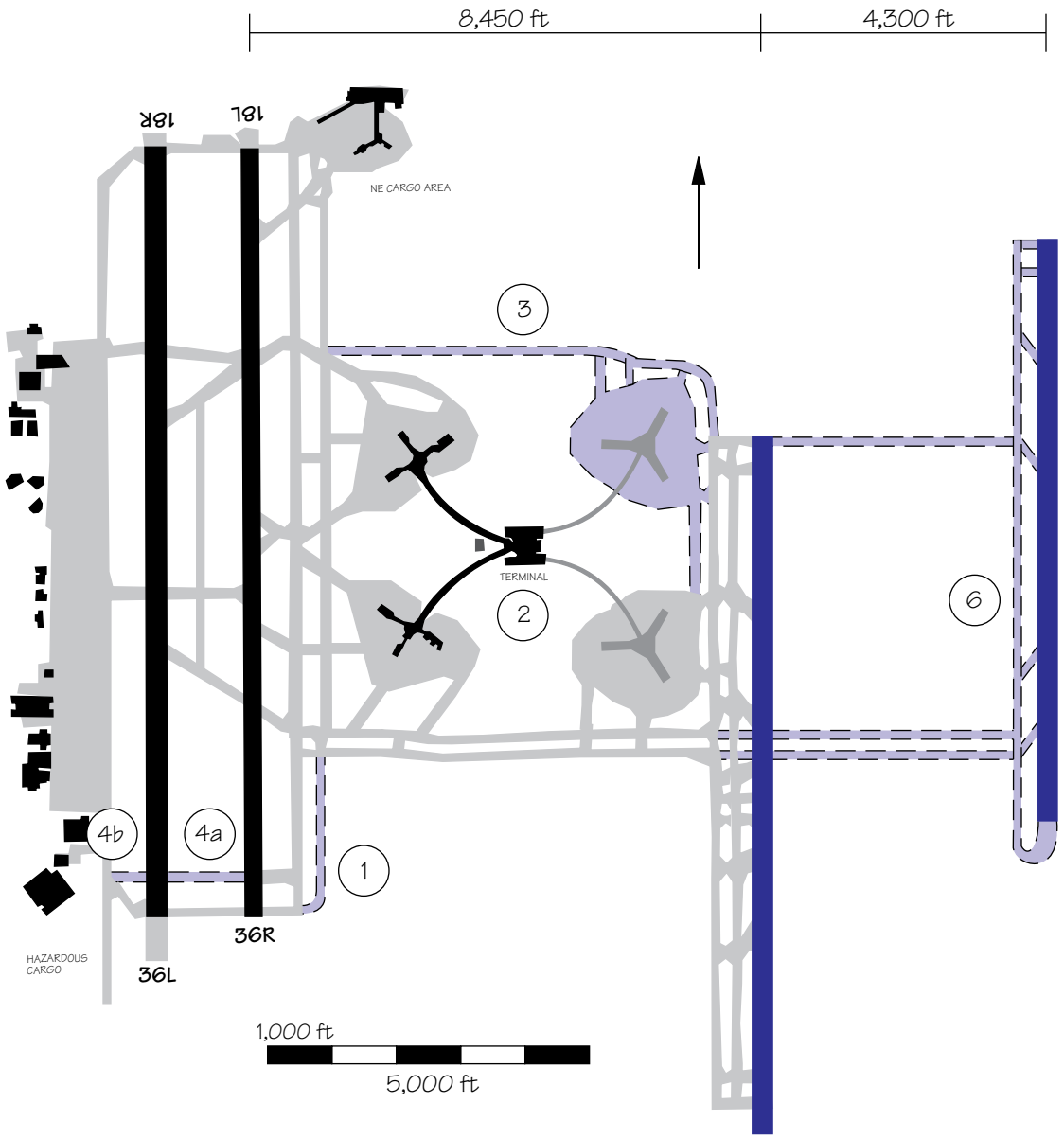
Recommendations

Airfield Improvements

1. Construct taxiway from southeast corner of terminal to Runway 29 approach threshold
2. Build taxiway parallel to Runway 27L
3. Add taxiway between north and south complexes
4. Convert Taxiway 1 to air carrier Runway 29 and add parallel taxiway
5. Enlarge staging pads at entrances to Runway 11/29
6. Construct additional angled exit off Runway 11
7. Build penalty box on south side of approach end of Runway 29

Facilities and Equipment Improvements

8. Install MLS on Runways 29 and 27
9. Install a non-directional beacon approach to Runway 29


8,450 ft
4,300 ft
18R
18L
NE CARGO AREA
3
TERMINAL
2
6
4b
4a
1
36R
HAZARDOUS CARGO
36L
1,000 ft
5,000 ft

Orlando International Airport
Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Extend Taxiway C to threshold of Runway 36R
2. Construct new heliport
3. Construct north crossfield taxiway

4a. Construct new Taxiway B9 from Runway 36R to Runway 36L

4b. Construct new Taxiway B9 from Taxiway A to threshold of Runway 36L

5. Construct staging areas on all runways
6. Construct fourth runway and associated taxiways

Facilities and Equipment Improvements

7. Install VOR at OIA

8a. Install CAT III ILS on Runway 18R

8b. Install CAT III ILS on all runways

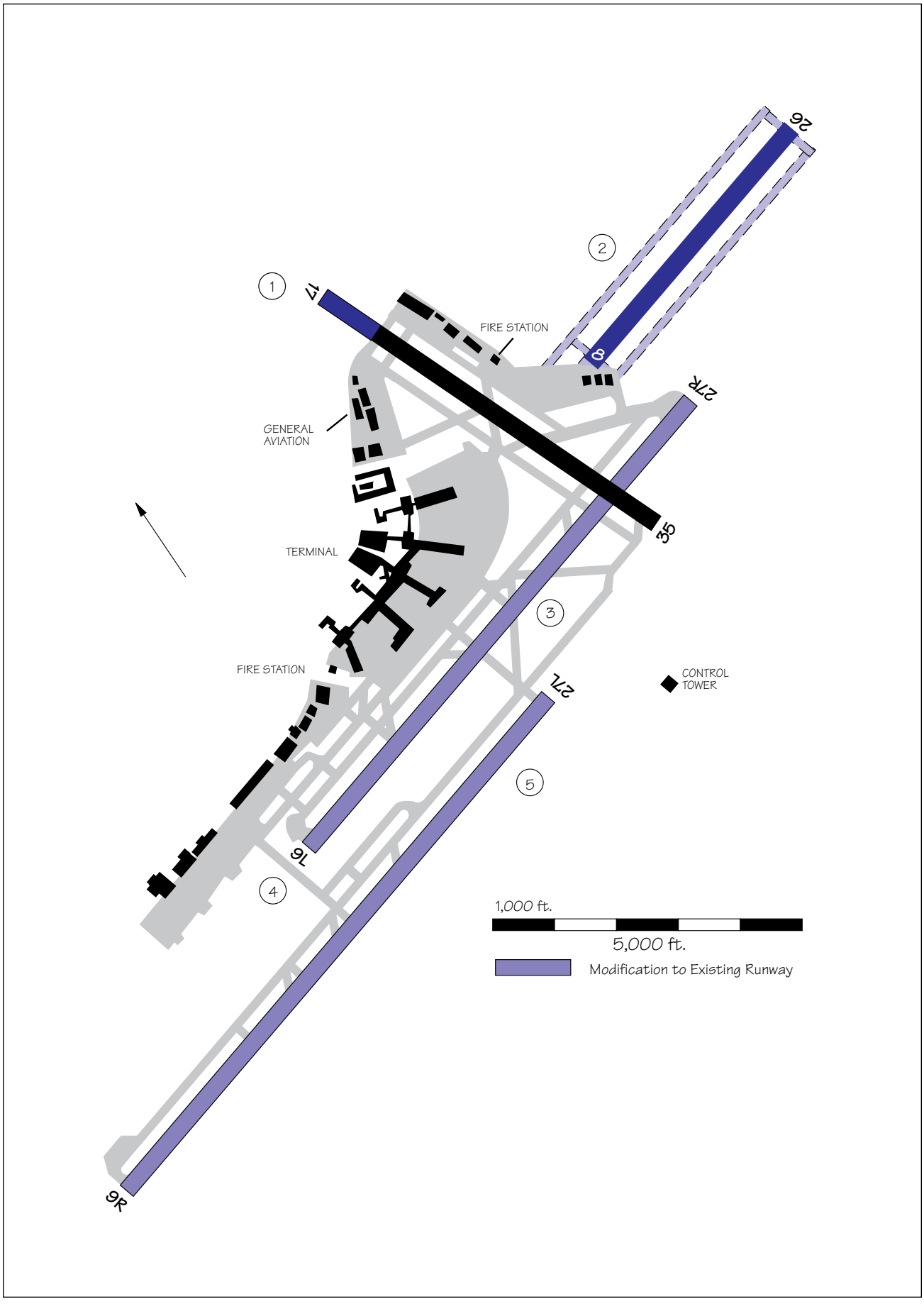
9. Install ASDE
10. Install PRM

Operational Improvements

11. Implement ramp control by users
12. Implement triple parallel approaches (four-runway configuration using PRM)
13. Modifications to terminal airspace
14. Restructure airways
15. Use ground crossovers versus air crossovers
16. Segregate GA and helicopter operations from turbojets

User Improvements

17. Encourage GA use of alternative airports by providing new east and west reliever airports


26
2
1
17
FIRE STATION
8
27R
GENERAL AVIATION
35
TERMINAL
3
FIRE STATION
CONTROL TOWER
27L
5
16
4
1,000 ft.
5,000 ft.
Modification to Existing Runway
9R

Philadelphia International Airport
Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Extend Runway 17/35 600 ft. to the north
2. Construct new 5,000-ft. commuter Runway 8/26 3,000 ft. north of Runway 9R/27L
3. Relocate Runway 9L/27R (laterally) 400 ft. to the south with associated parallel and apron taxiways
4. Relocate Runway 9L/27R (longitudinally) 2,735 ft. to the west
5. Relocate Runway 9R/27L (longitudinally) 1,000 ft. to the east

Facilities and Equipment Improvements

6. Install localizer directional aid (LDA) on Runways 9L and 27L
   - 6a. LDA approach to Runway 27L with ILS arrivals on Runway 27R
   - 6b. LDA approach to Runway 9L with ILS arrivals on Runway 9R
7. Install Precision Runway Monitor (PRM)

Operational Improvements

8. Allow restricted air carrier use on Runway 17/35 with arrivals on Runway 35 and departures on Runway 17
9. Implement preferential taxiway routing
10. Conduct dependent instrument approaches to Runways 27L and 17
11. Conduct dependent instrument approaches to Runways 27R and 17
12. Implement a steep-angle MLS approach to Runway 27L
13. Conduct an airspace capacity design project and re-structure terminal airspace
    - 13a. Remove departure fix restrictions
    - 13b. Install terminal ATC automation (TATCA) enhancements


26R
26L
8R
800 ft
1,000 ft
5,000 ft

Phoenix-Sky Harbor International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Construct new Runway 8S/26S south of Runway 8R/26L with associated taxiways
2. Construct holding aprons at two runway ends
3. Widen fillets at Taxiways C5 and C7 off of Runway 8R/26L
4. Holding area southeast of Terminal 3
5. New angled exit off of Runway 8R/26L to Taxiway C
6. New angled exit off of Runway 8S/26S to Taxiway D
7. Second midfield crossover Taxiway Y adjacent to Taxiway X
8. Crossover Taxiway W and associated taxiways at approach ends of Runway 26R and Runway 26L
9. Crossover Taxiway Z from Taxiways B3 to C3
10. Construct Terminal 4 and remove Terminal 1

11a. Extend Taxiway A to end of Runway 26R

11b. Extend Taxiway D to end of Runway 26L

12. Complete northside taxilane (parallel to and north of Taxiway C)
13. Relocation of 161st Air Refueling Group

Facilities and Equipment Improvements

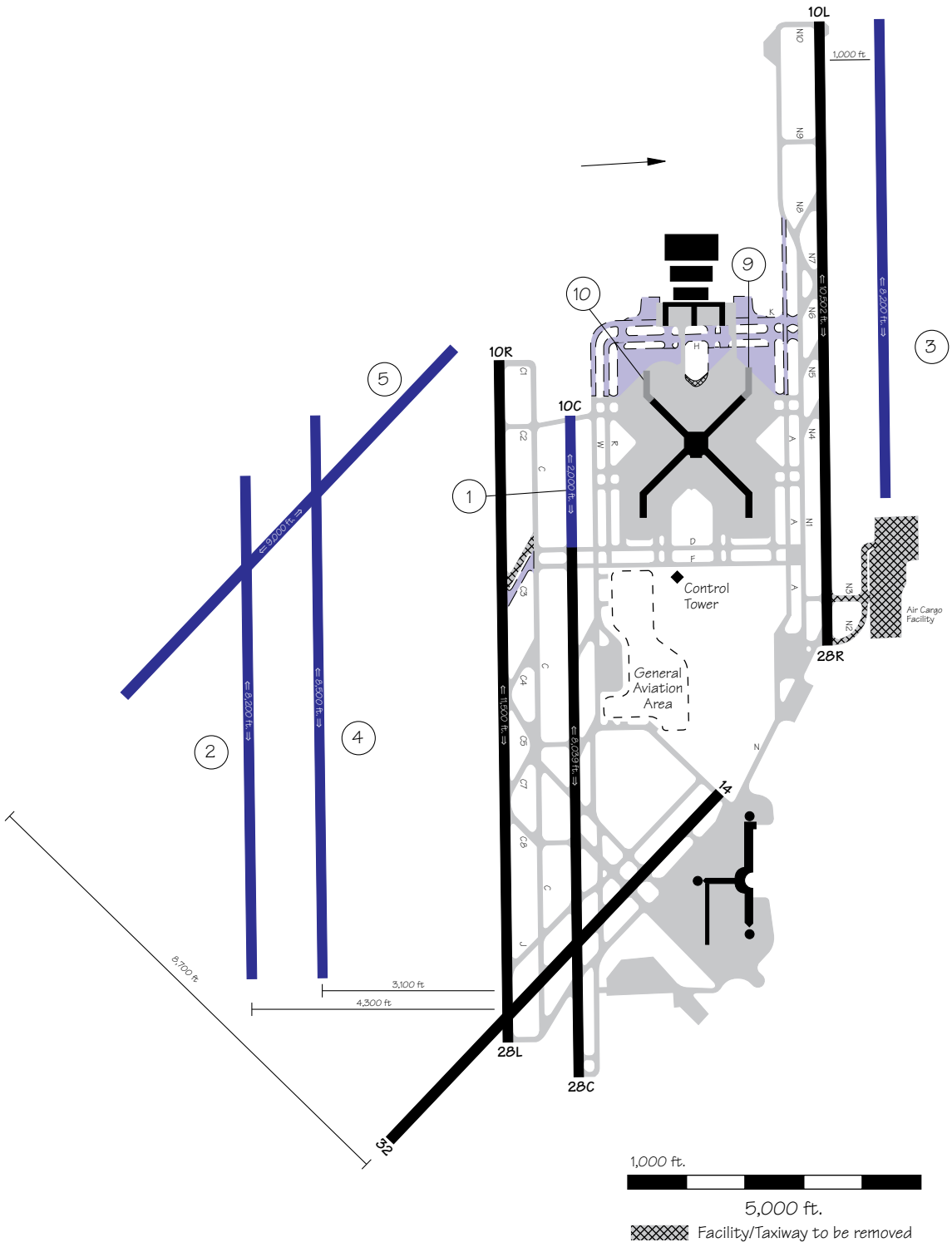
14. TVOR/VORTAC (Carefree) in northern valley
15. ILS (CAT I) for Runway 26R
16. Precision approach for Runway 8L
17. Precision approach for Runway 8S/26S
18. Potential benefits of MLS at Sky Harbor
19. VORTAC near airport

Operational Improvements

20. Reduce in-trail separations to 2.5 nm
21. Reduce runway occupancy times
22. IFR dependent parallel approaches
23. IFR independent parallel approaches
24. Segregate fast and slow aircraft
25. Reduce arrival to intersection departure separation
26. Reduce in-trail departure restrictions to allow simultaneous departures
27. Reduce noise restrictions to utilize special turboprop corridors

User Improvements

28. Uniformly distribute scheduled commercial operations within the hour
29. Provide attractive alternative facilities for GA at other airports
30. Pilot education for reduced runway occupancy times


10L
10R
10C
28R
28L
28C
14
32
1
2
3
4
5
9
10
Control Tower
General Aviation Area
Air Cargo Facility
1,000 ft.
≤ 8,200 ft. ⇒
≤ 9,000 ft. ⇒
≤ 8,500 ft. ⇒
≤ 11,500 ft. ⇒
≤ 8,039 ft. ⇒
≤ 10,502 ft. ⇒
≤ 12,000 ft. ⇒
8,700 ft.
3,100 ft.
4,300 ft.
1,000 ft.
5,000 ft.
Facility/Taxiway to be removed

Greater Pittsburgh International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

Runway Extension

1. Extend Runway 10C/28C 2,000 feet west

One New Runway

2. Build 8,500 foot independent south parallel runway 4,300 feet south of Runway 10R/28L
3. Build 8,200 foot north parallel runway 1,000 feet north of Runway 10L/28R
4. Build 8,500 foot dependent south parallel runway 3,100 feet south of Runway 10R/28L
5. Build 9,000 foot crosswind Runway 14R/32L 8,700 feet west of Runway 14/32

Two New Runways

6. Build north and south parallel runways
7. Build two south parallel runways, 3,100 and 4,300 feet south of Runway 10R/28L
8. Build south parallel and crosswind runways

Terminal Area Improvements

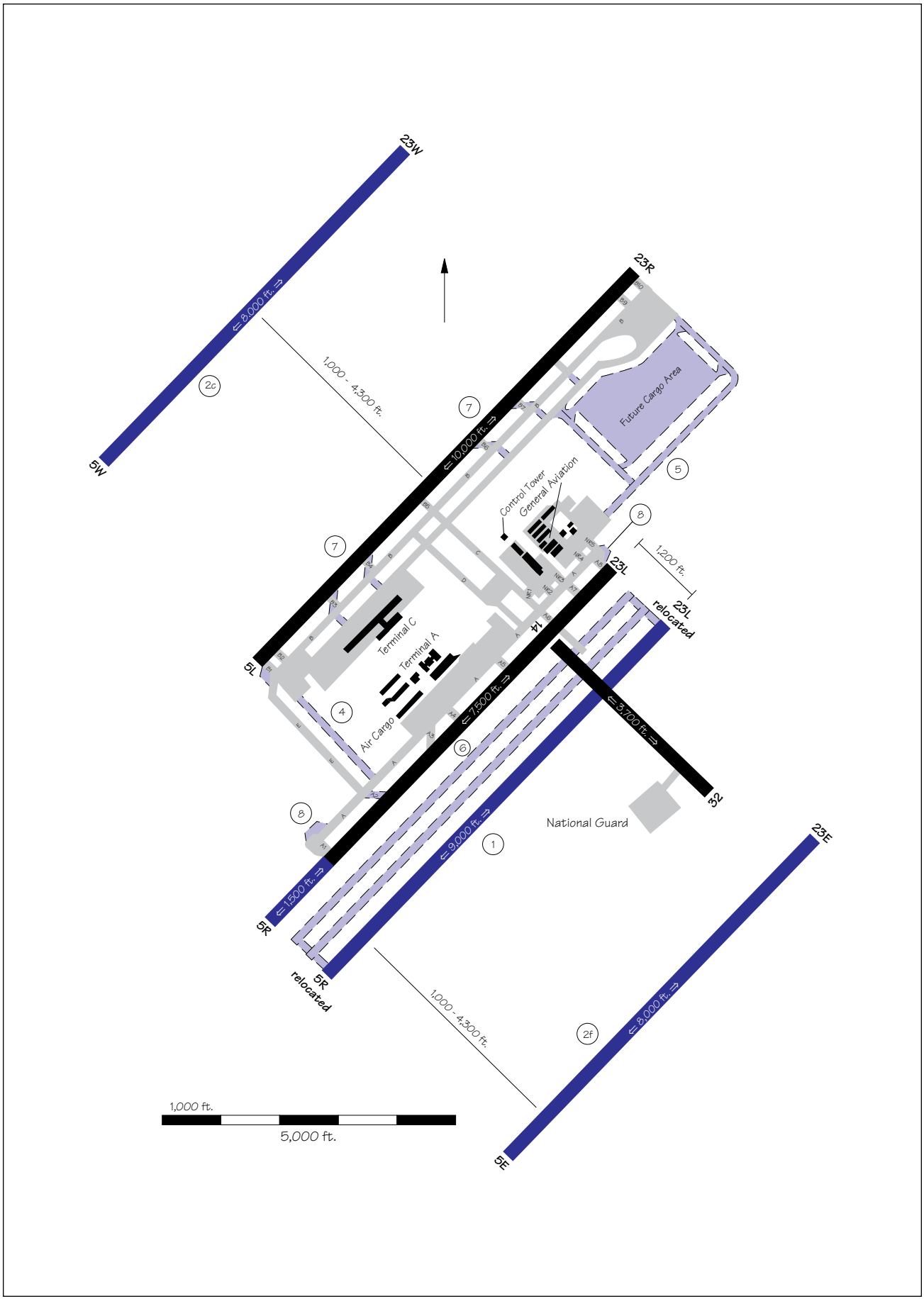
9. Add new gates to northwest finger of new Midfield Terminal and improve Taxiway H to Taxiway R
10. Add new gates to southwest finger of new Midfield Terminal and improve Taxiway K from Taxiway W to A

Facilities and Equipment Improvements

11. Upgrade Runway 10R to CAT II/III ILS
12. Install Precision Runway Monitor (PRM)

Operational Improvements

13. Conduct an airspace capacity design project and re-structure terminal airspace


23W
23R
5W
5L
5R
5R relocated
5E
23L
23L relocated
14
32
25E
≤ 8,000 ft. ⇒
≤ 10,000 ft. ⇒
≤ 7,500 ft. ⇒
≤ 9,000 ft. ⇒
≤ 1,500 ft. ⇒
≤ 3,700 ft. ⇒
1,000 - 4,300 ft.
1,200 ft.
Future Cargo Area
Control Tower
General Aviation
Terminal C
Terminal A
Air Cargo
National Guard
2c
2f
1
4
5
6
7
8
1,000 ft.
5,000 ft.

Raleigh-Durham International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Relocate Runway 5R/23L 1,200 ft. southeast and extend to 9,000 ft. in length
2. Construct new 8,000 ft. third parallel Runway 5W/23W

   Runway 5W/23W

   2a. 1,000 to 2,400 ft. from Runway 5L/23R

   2b. 2,500 ft. from Runway 5L/23R

   2c. 3,000 to 4,300 ft. from Runway 5L/23R

   Runway 5E/23E

   2d. 8,000 ft. runway 1,000 to 2,400 ft. from relocated Runway 5R/23L

   2e. 8,000 ft. runway 2,500 ft. from relocated Runway 5R/23L

   2f. 8,000 ft. runway 3,000 to 4,300 ft. from relocated Runway 5R/23L
3. Construct new fourth parallel Runway 5E/23E (assumes Runway 5W/23W in place)

   3a. Triple independent/dependent arrivals

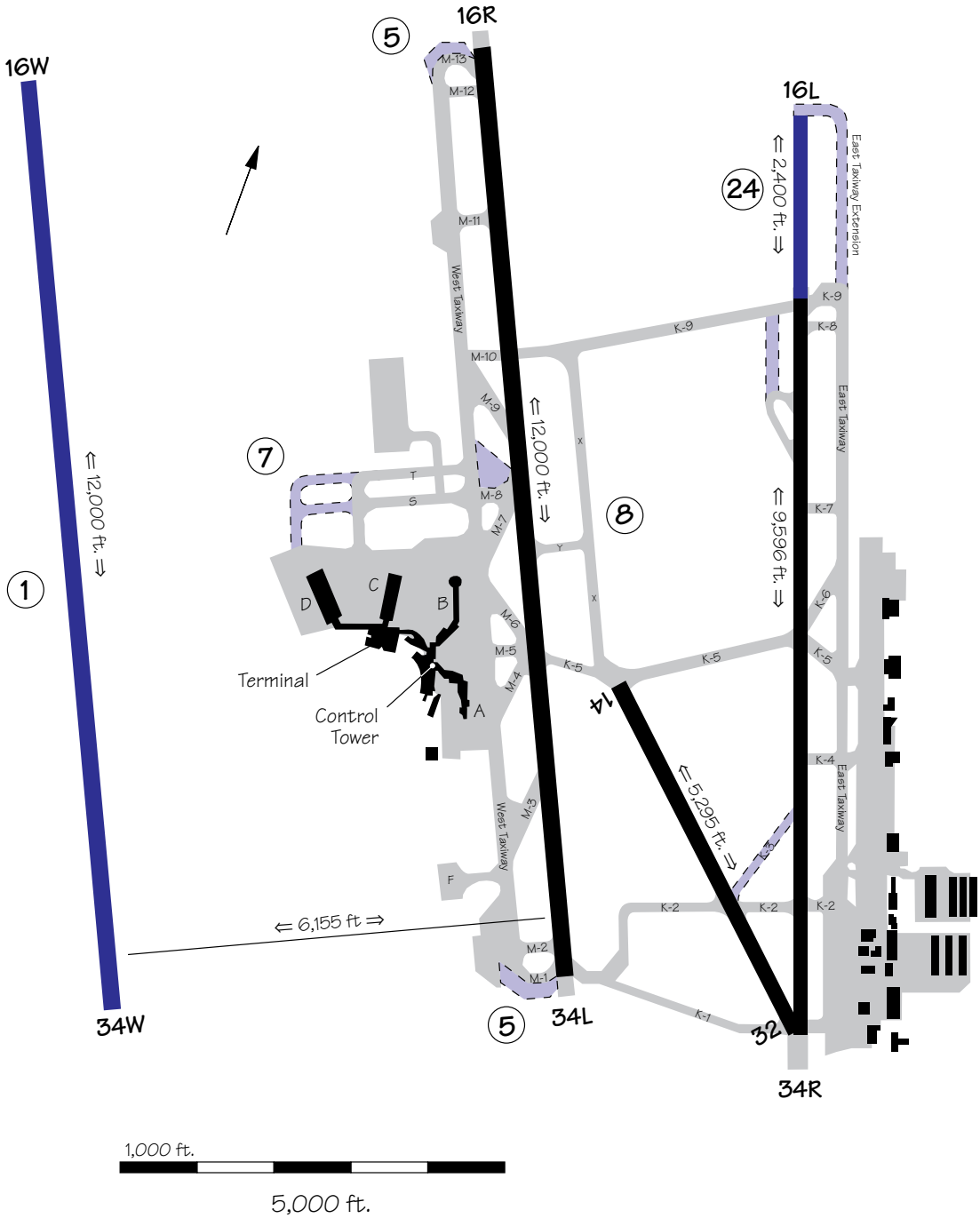
   3b. Triple independent arrivals
4. Construct dual parallel taxiway near feeder Taxiway E
5. Construct taxiway from new cargo complex to Runway 5R/23L
6. Construct full-length dual parallel taxiways for Runway 5R
7. Construct angled exits on Runway 5L/23R
8. Expand holding and sequencing pads and bypass taxiways on Runway 5R/23L and all future runways

Facilities and Equipment Improvements

9. Install CAT II/III ILS on existing and future runways
10. Install runway visual range (RVR) on Runway 23L and future runways
11. Install wake vortex advisory system
12. Install airport surface detection equipment (ASDE)

Operational Improvements

13. Implement staggered approaches with 1.5 nm separation
14. Implement independent approaches to existing runways (Precision Runway Monitor (PRM))
15. Implement 2.5 nm spacing between similar class, non-heavy aircraft arrivals in IFR
16. Establish a terminal control area (TCA)
17. Study noise abatement procedures
18. Conduct an airspace capacity design project and restructure terminal and en route airspace


16W
16R
16L
34W
34L
34R
⇐ 12,000 ft. ⇒
⇐ 12,000 ft. ⇒
⇐ 2,400 ft. ⇒
⇐ 9,596 ft. ⇒
⇐ 5,295 ft. ⇒
⇐ 6,155 ft ⇒
Terminal
Control Tower
West Taxiway
East Taxiway
East Taxiway Extension
1,000 ft.
5,000 ft.

Salt Lake City International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Construct a parallel runway to the west with independent IFR capability (CAT III ILS on both ends)
2. Taxiway to Delta Air Lines hangar
3. Relocate tower
4. Revise taxiway exit layout
5. Construct staging areas for Runway 16R/34L at runway entrances
6. Terminal expansion
7. Extend Taxiways S and T to west boundary of the terminal ramp
8. Rehabilitate Taxiways X and Y
9. Improve aircraft access to cargo facilities

Facilities and Equipment Improvements

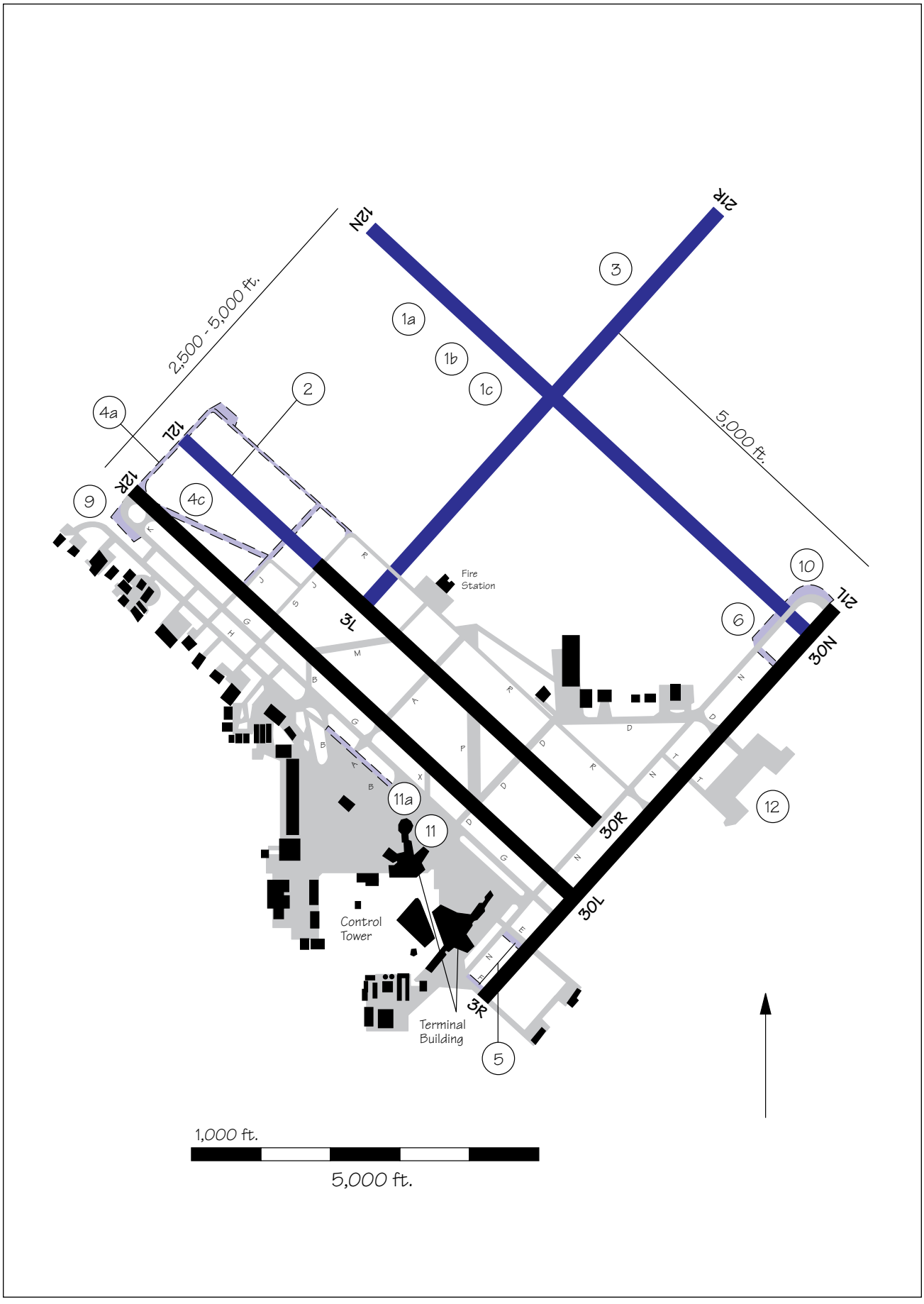
10. CAT I ILS on Runway 34R
11. LDA approach to Runway 34R
12. CAT III ILS on Runway 16R
13. Install Precision Runway Monitor (PRM)
14. Install Microwave Landing System (MLS)
15. Install runway visual range (RVR) equipment on Runway 34R
16. Install Airport Surface Detection Equipment (ASDE)
17. Install taxiway centerline lights

Operational Improvements

18. Make Bonneville routing one-way
19. Reduce in-trail arrival separation standard to 2.5 nm (like class aircraft only)
20. IFR independent converging approaches

User Improvements

21. Reduce runway occupancy times through pilot education (10%, 20%, or 30% runway occupancy time reduction)
22. Improve reliever airports (reduce general aviation operations by 10%, 20%, or 30%)
23. Delta Air Lines ramp control tower


12N
21R
2,500 - 5,000 ft.
5,000 ft.
1a
1b
1c
2
3
4a
4c
12L
12R
9
Fire Station
10
21L
6
30N
31L
30R
30L
11a
11
12
Control Tower
Terminal Building
3R
5
1,000 ft.
5,000 ft.

San Antonio International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

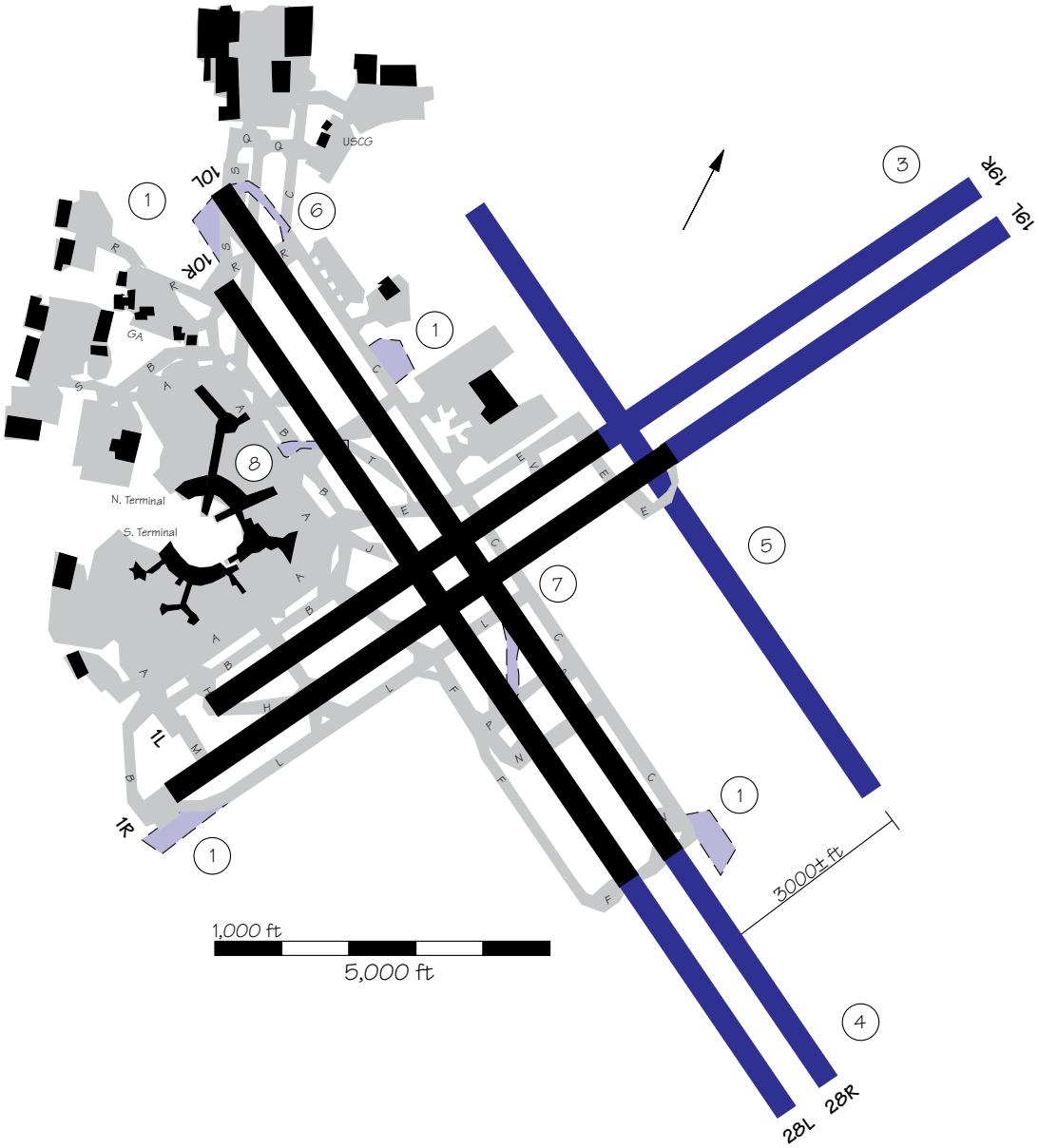
1. Construct new Runway 12N/30N northeast of Runway 12R/30L
   - 1a. Construct independent air carrier length Runway 12N/30N
   - 1b. Construct dependent air carrier length Runway 12N/30N
   - 1c. Construct independent regional air carrier/general aviation (GA) Runway 12N/30N
2. Extend Runway 12L/30R to air carrier length and operate without noise restrictions
   - 2a. Extend Runway 12L/30R and operate with noise restrictions
3. Construct independent air carrier Runway 3L/21R
4. Construct new and improve existing taxiway system to extended Runway 12L/30R
   - 4a. Widen and strengthen Taxiway K and extend to Taxiway R
   - 4b. Improve Taxiways M and P and part of Taxiway N near end of Runway 30L
   - 4c. Construct new diagonal Taxiway J1 at end of Runway 12R
5. Widen Taxiway F and Taxiway E west to ramp at end of Runway 3
6. Construct new Taxiway N1 at end of Runway 21
7. Construct new or extend existing taxiway system to new Runway 12N/30N and extended Runway 12L/30R
8. Provide shoulders for Taxiway G to accommodate four-engine jets
9. Construct holding pads at departure ends of Runways 12R, 3, and 30L
10. Construct holding pads at departure end of Runway 21
11. Expand Terminal to 60 gates
    - 11a. Construct Taxiway H1 to support terminal expansion
12. Expand east cargo ramp
13. Construct arrival holding areas
14. Improve exit turnoffs for existing runways
15. Provide stabilized shoulders for Runway 12R/30L

Facilities and Equipment Improvements

16. Install doppler radar for wind shear detection
17. Install Precision Runway Monitor (PRM)
18. Install Airport Surface Detection Equipment (ASDE)
19. Upgrade ILS on Runway 12R to Category III
20. Install Category II/III ILS on Runway 12N and Category I ILS on Runway 30N with associated approach light system (ALS) and runway visual range (RVR)
21. Install Category I ILS on extended Runway 12L/30R with associated ALS and RVR
22. Install Microwave Landing System (MLS) on Runway 21
23. Install Localizer Directional Aid (LDA) on Runway 12L/30R
24. Install dual Runway Visual Range (RVR) on Runway 3

Operational Improvements

25. Reduce in-trail arrival separations to 2.5 nm
26. Segregate traffic on runways
    - 26a. Segregate by aircraft type
    - 26b. Segregate by arrivals and departures
27. Install Wake Vortex Advisory System (WVAS) (existing configuration)
    - 27a. Install WVAS (with Runway 12L/30R extension)
28. Relocate general aviation (GA)/fixed base operator (FBO) areas to northwest side of Runway 12L
29. Relocate non-air carrier operations
    - 29a. Relocate 25% of non-air carrier operations
    - 29b. Relocate 50% of non-air carrier operations
30. Distribute traffic more uniformly
31. Conduct an airspace capacity design project and re-structure San Antonio area airspace
32. New commercial airport planning


USCG
10L
10R
GA
N. Terminal
S. Terminal
1L
1R
19R
19L
28L
28R
3000± ft
1,000 ft
5,000 ft

San Francisco International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Create holding areas near Runways 10L, 10R, 1R, and 28R
2. Improve noise barrier for Runway 1R
3. Extend Runways 19L and 19R
4. Extend Runways 28L and 28R
5. Construct independent parallel Runway 28
6. Extend Taxiway C to threshold of Runway 10L
7. Create high speed exit from Runway 10L between Taxiways L and P
8. Extend Taxiway T to Taxiway A

Air Traffic Control Improvements

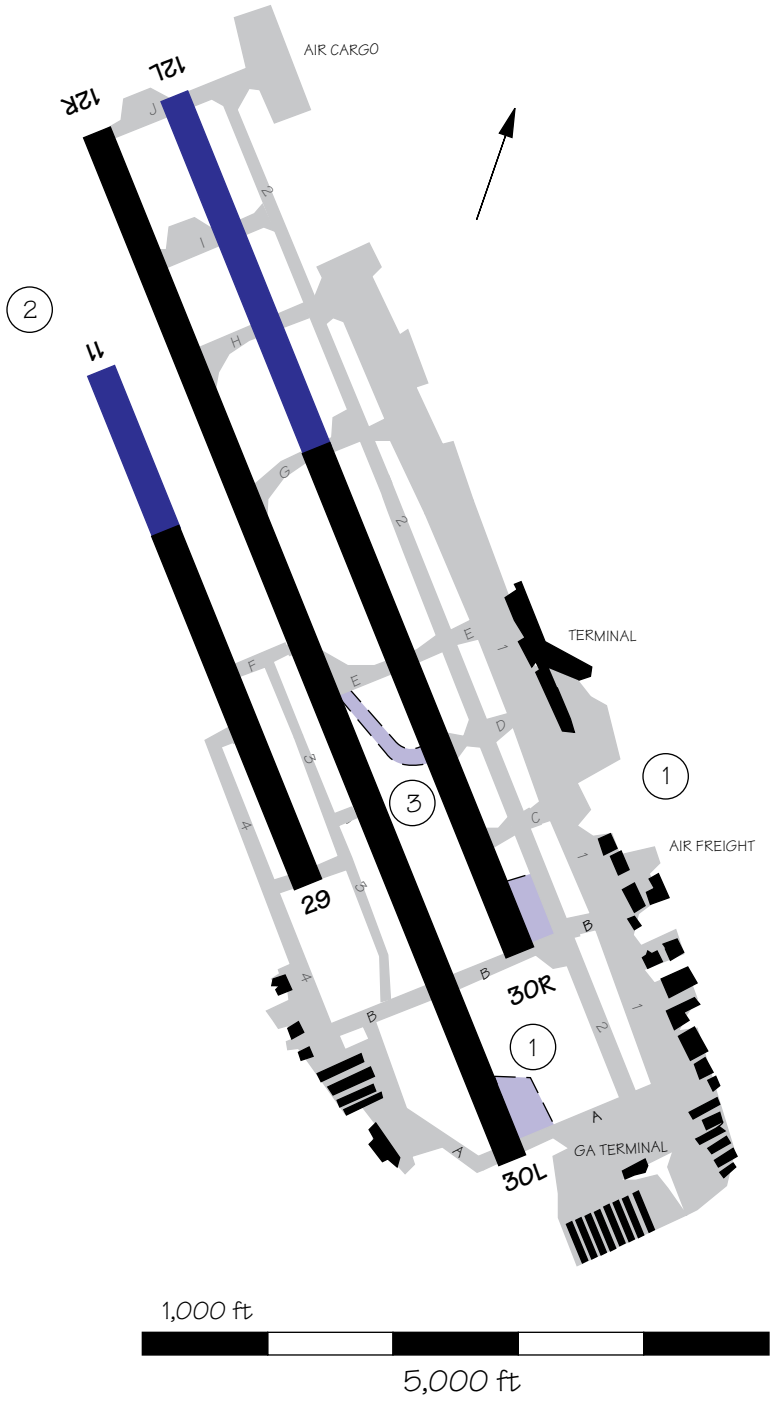
9. Expand visual approach procedures
10. Offset instrument approach to Runway 28R
11. Use staggered 1-mile divergent IFR departures on Runways 10L and 10R

Facilities and Equipment

12. Install Microwave Landing System (MLS) on Runways 28 and 19

User Improvements

13. Taxi aircraft across active runways instead of towing
14. Distribute airline traffic more evenly among three airports
15. Distribute traffic uniformly within the hour
16. Divert 50% general aviation to reliever airports


AIR CARGO
12L
12R
11
29
30R
30L
TERMINAL
AIR FREIGHT
GA TERMINAL
1
2
3
1,000 ft
5,000 ft

San Jose International Airport
Capacity Design Team Project Summary

Recommendations

Airfield Improvements

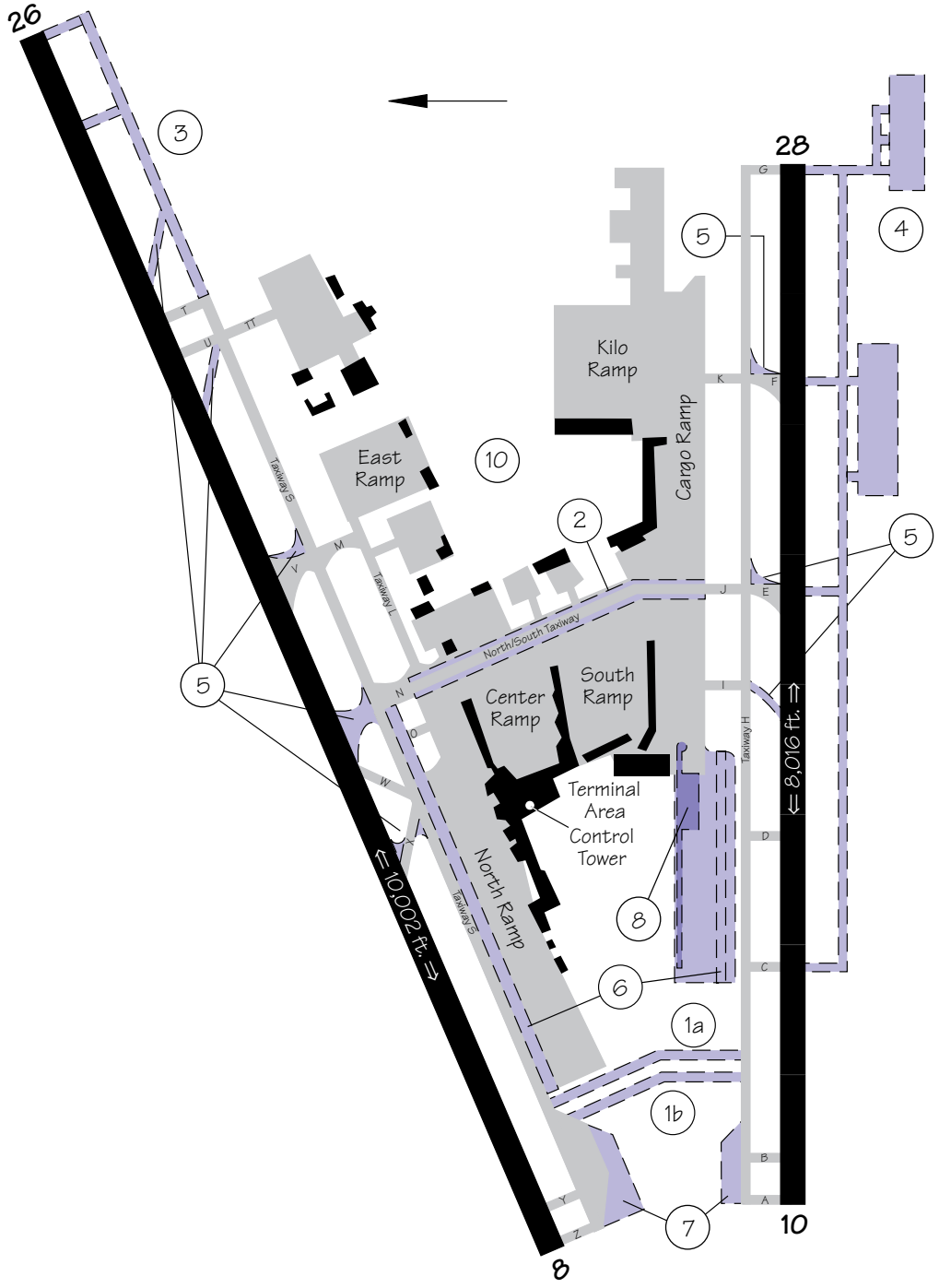
1. Create staging area at Runway 30L
1. Create staging area at Runway 30R
2. Extend and upgrade Runway 11/29
   2a. Extension of Runway 30R
3. Create angled exits for Runway 12R

Facilities and Equipment Improvements

4. Promote use of reliever ILS training facility
5. Install MLS on Runway 30L

Air Traffic Control Improvements

6. Implement simultaneous departure with Moffett Field


26
28
10
8
3
4
5
10
2
1a
1b
6
7
8
Kilo Ramp
Cargo Ramp
East Ramp
North/South Taxiway
Center Ramp
South Ramp
Terminal Area Control Tower
North Ramp
Taxiway S
Taxiway L
Taxiway H
⇐ 10,002 ft. ⇒
⇐ 8,016 ft. ⇒
1,000 ft.
5,000 ft.

San Juan Luis Muñoz Marín International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Construct new north/south taxiway complex at the west end
   1a. Single one-way taxiway
   1b. Two-directional taxiway
2. Expand existing north/south taxiway to provide two-directional capability
3. Extend Taxiway S
4. Construct new ramp area on south side of airport
5. Construct new/improve existing exits on Runways 8 and 10
6. Expand existing Taxiways S and H to dual taxiways adjacent to north and south ramps
7. Construct holding pads (staging areas) on Runways 8 and 10
   7a. With three hold positions
   7b. With five hold positions
8. Construct new international passenger terminal

Facilities and Equipment Improvements

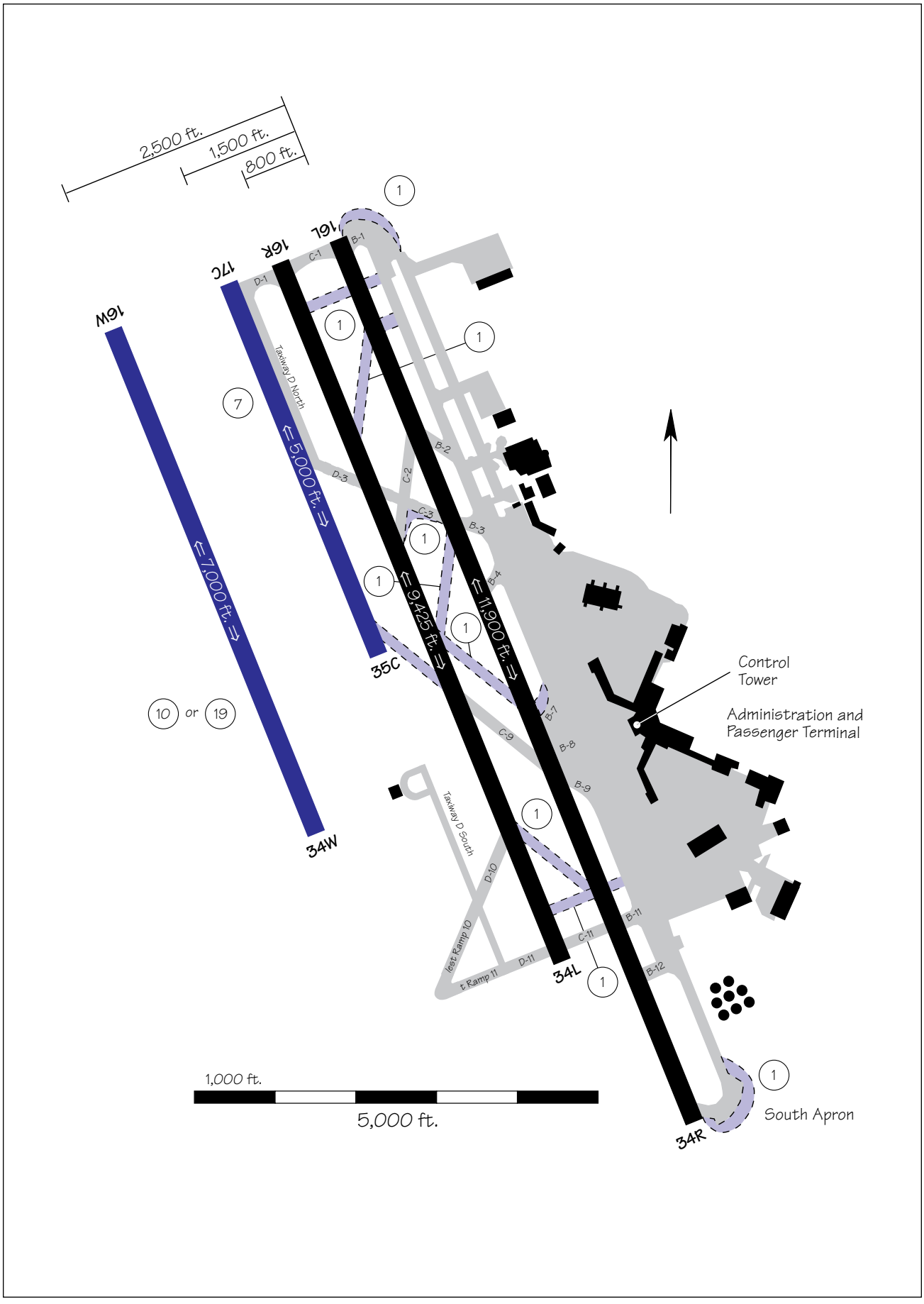
9. Upgrade VOR to include doppler
10. Construct new air traffic control tower
11. Install wake vortex advisory system
12. Install terminal ATC automation (TATCA) enhancements
13. Install improved approach aids on Runway 26
    13a. Install Precision Approach Path Indicator (PAPI)

Operations Improvements

14. Implement improved oceanic separations (no fix restrictions)
15. Use 2.5 nm separations on final approach
16. Unrestricted use of Runway 10

User Improvements

17. Remove military operations
18. Enhance general aviation (GA) reliever airports and reduce GA activity by 50%


2,500 ft.
1,500 ft.
800 ft.
16L
16R
17C
16W
34W
35C
34L
34R
Taxiway D North
Taxiway D South
⇐ 5,000 ft. ⇒
⇐ 7,000 ft. ⇒
⇐ 9,425 ft. ⇒
⇐ 11,900 ft. ⇒
10 or 19
7
1
Control Tower
Administration and Passenger Terminal
South Apron
1,000 ft.
5,000 ft.

Seattle-Tacoma International Airport
Capacity Design Team Project Summary

Recommendations

Improvements to Existing Airfield

1. Improved exit and taxiway construction
2. Reduce in-trail spacing to 2.5 nm
3. CAT I ILS on Runway 16L (IFR-1)
4. LDA approach to Runway 16L/34R and ILS to Runway 16R/34L
5. Noise abatement effect on departures
6. Install wake vortex advisory system

New Runway Improvements

Commuter Runway

7. Commuter Runway 17C/35C (converted Taxiway D)
8. LDA to Runways 17C/35C and ILS to Runway 16L/34R
9. Install wake vortex advisory system

Dependent Runway

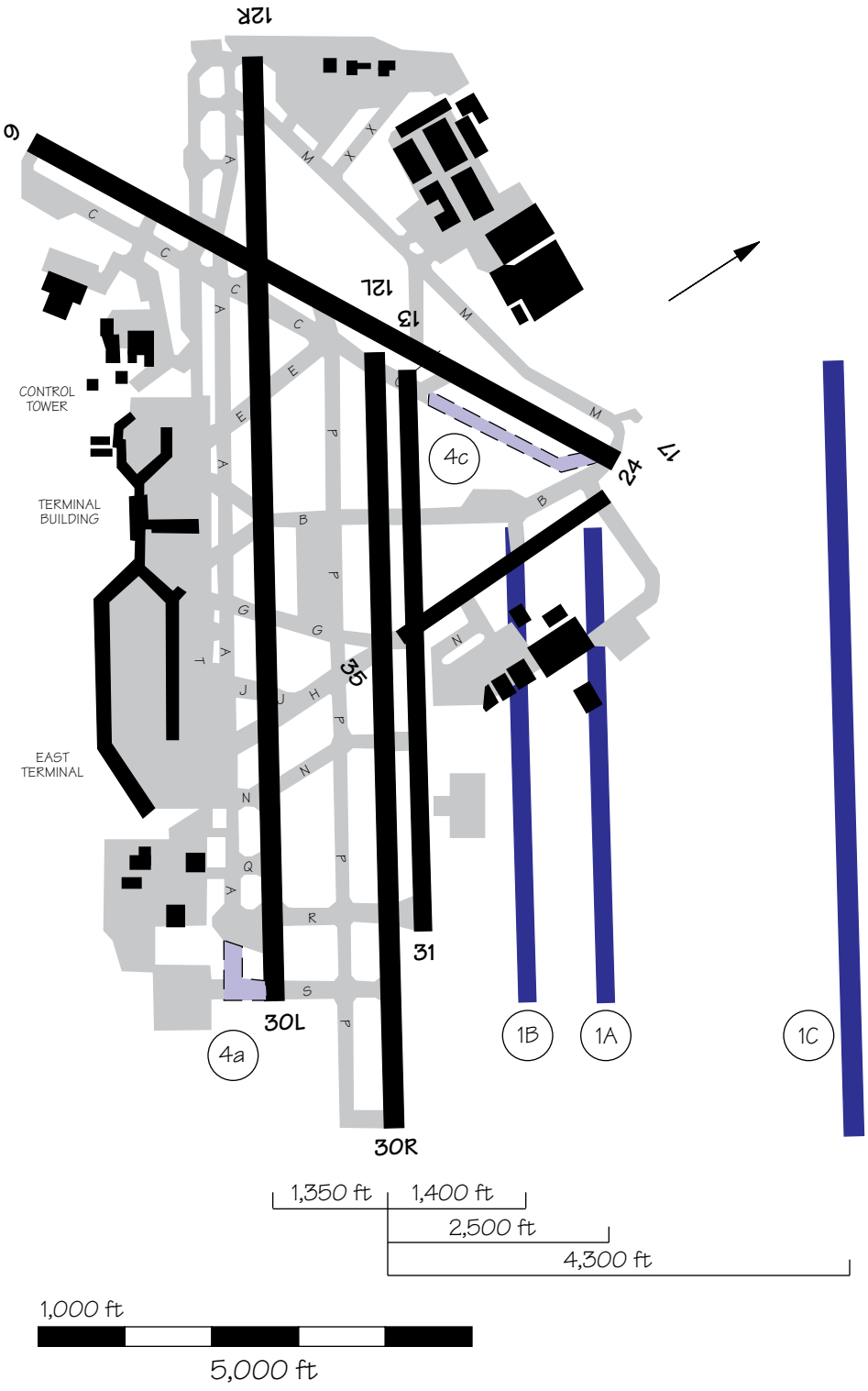
10. Air carrier (dependent) Runway 16W/34W
11. LDA approaches to Runway 16W/34W
12. CAT I ILS on Runway 16W (IFR-1)
13. CAT II ILS on Runway 16W (over CAT I)
14. CAT I ILS on Runway 34W (IFR-1)
15. Staggered approaches to Runways 16L & 16W and 34R & 34W - 2.0 nm stagger
16. Staggered approaches to Runways 16L & 16W and 34R & 34W - 1.5 nm stagger
17. Operate Runway 16R/34L as primary runway versus Runway 16L/34R with Runway 16W/34W
18. Install wake vortex advisory system

Independent Runway

19. Air carrier (independent) Runway 16W/34W
20. CAT II on Runway 16W (only)

Demand Management

21. Uniformly distribute scheduled commercial operations


12R
6
12L
13
CONTROL TOWER
TERMINAL BUILDING
EAST TERMINAL
4c
24
17
35
31
30L
30R
4a
1B
1A
1C
1,350 ft
1,400 ft
2,500 ft
4,300 ft
1,000 ft
5,000 ft

Lambert-St. Louis International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. New runway parallel to Runway 12L/30R
   - la. Alternate 1: new independent commuter runway 2,500 ft. from Runway 12L/30R
   - lb. Alternate 2: new dependent commuter runway 1,400 ft. from Runway 12L/30R
   - lc. Alternate 3: new independent air carrier runway parallel to Runway 12L/30R
2. Convert Taxiway F to VFR Runway 13/31
3. Angled exits on Runway 12L/30R
4. Taxiway extensions
   - 4a. Extend Taxiway A south to end of Runway 30L
   - 4b. Extend Taxiway P from Taxiway C to Taxiway M
   - 4c. Extend Taxiway C from Taxiway F to end of Runway 24
5. Realign Taxiway B off Taxiway A to Runway 12R/30L
6. Establish queuing areas to various runway ends
7. Relocate cargo area
8. Relocate mid coast aviation to northeast

Facilities and Equipment Improvements

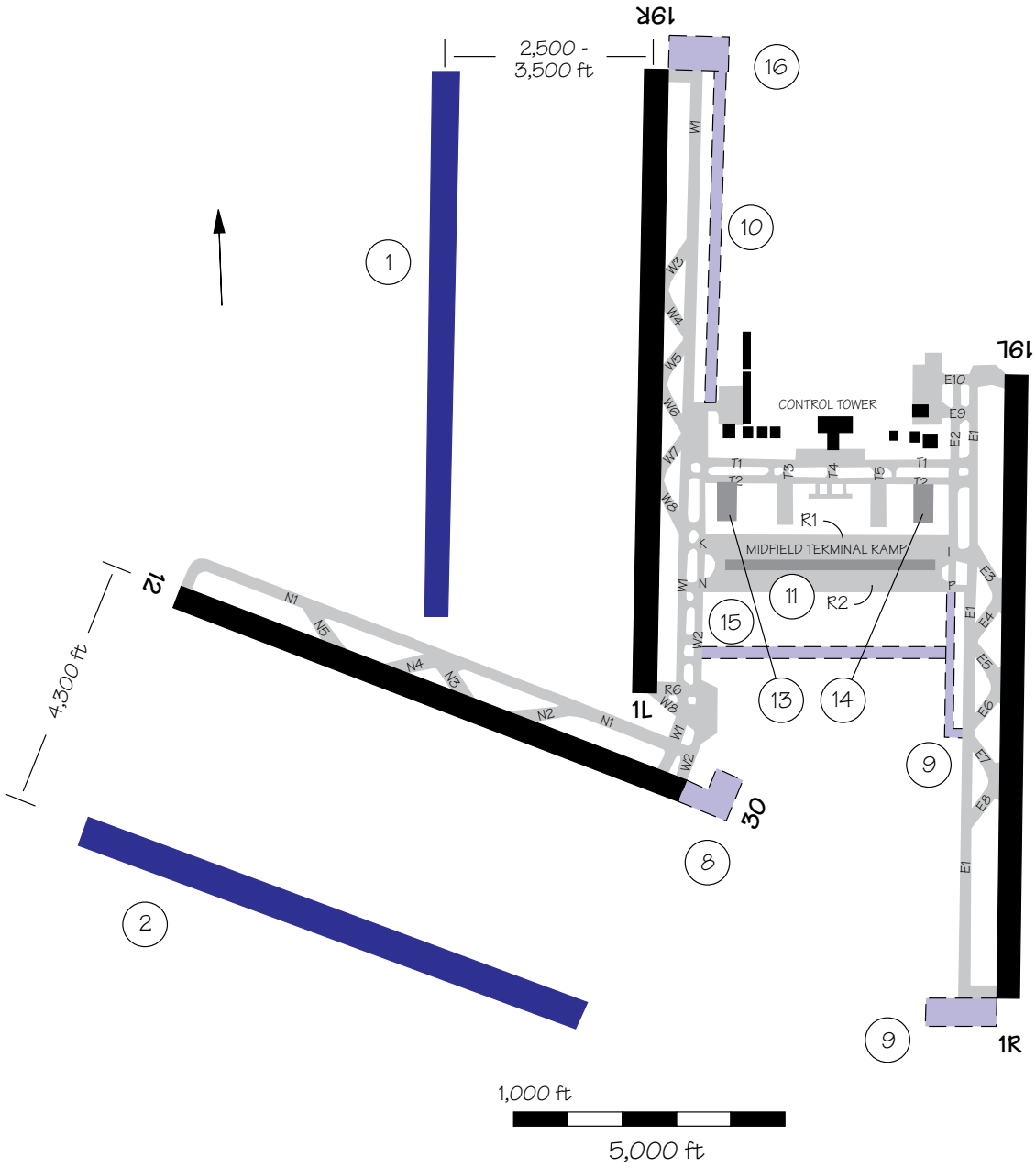
9. Install marker lights and parking lanes in center field remote holding area
10. Install wake vortex advisory system
11. Install CAT III ILS to reduce approach minima on Runways 12L and 12R
12. IFR approaches with additional instrumentation on Runway 6
13. IFR approaches with additional instrumentation on Runway 24
14. LDA approaches support
    - 14a. Equipment installation on Runway 30L
    - 14b. Equipment installation on Runway 12L
15. Install light systems at taxiway and runway intersections
16. Install ASDE

Operational Improvements

17. Reduce IFR parallel approach stagger to 2 nm
18. Reduce IFR in-trail separations to 2.5 nm
19. Converging IFR approaches to
    - 19a. Runways 6 and 30R
    - 19b. Runways 6 and 30L
20. Converging IFR approaches to
    - 20a. Runways 24 and 30R
    - 20b. Runways 24 and 30L
21. Simultaneous approaches to ILS Runway 30R, LDA Runway 30L, and ILS Runway 24

User Improvements

22. Change fleet mix
    - 22a. Relocate GA 25%
    - 22b. Relocate GA 50%
    - 22c. Relocate GA 75%
23. Distribute scheduled commercial operations within the hour
24. Relocate Air National Guard


19R
2,500 -
3,500 ft
16
10
1
W1
W3
W4
W5
W6
W7
W8
19L
E10
E9
E2
E1
CONTROL TOWER
T1
T2
T3
T4
T5
T1
T2
R1
MIDFIELD TERMINAL RAMP
K
L
N
P
W1
11
R2
15
E3
E1
E4
E5
E6
E7
E8
E1
12
N1
N5
N4
N3
N2
N1
4,300 ft
1L
R6
W3
W2
W1
W2
13
14
9
30
8
2
9
1R
1,000 ft
5,000 ft

Washington Dulles International Airport Capacity Design Team Project Summary

Recommendations

Airfield Improvements

1. Construct Runway 1W/19W 3,500 ft. west of Runway 1L/19R
2. Construct Runway 12R/30L south of Runway 12/30
3. Widen turnback fillets on Runway 1L (at Exits W-3, W-5)
4. Widen turnback fillets on Runway 19L (at Exits E-6, E-8) (not pictured)
5. Complete construction of east/west Taxiway R-2
6. Add GA exits to Runways 19R (north of Exit W-3) and 19L (north of Exit E-3)
7. Extend Runway 12/30 southeast and enlarge Runway 30's holding pads
8. Add Runway 1R holding pad and extend Taxiway E-2 south (to south of Exit E-7)
9. Runway 19R staging improvements: extension of Taxiway W-2 north, Runway 19R holding pad, and Runway 19R bypass taxiway
10. Add midfield ramp
11. Add centerfield north/south taxiway
12. Midfield Terminal — Phase 1A (24 gates)
13. Midfield Terminal — Phase 1B (48 gates)
14. Add east/west Taxiway R-3, south of R-2, with 2 north/south stubs
15. Additional FBO, east of Runway 19R threshold

Facilities and Equipment Improvements

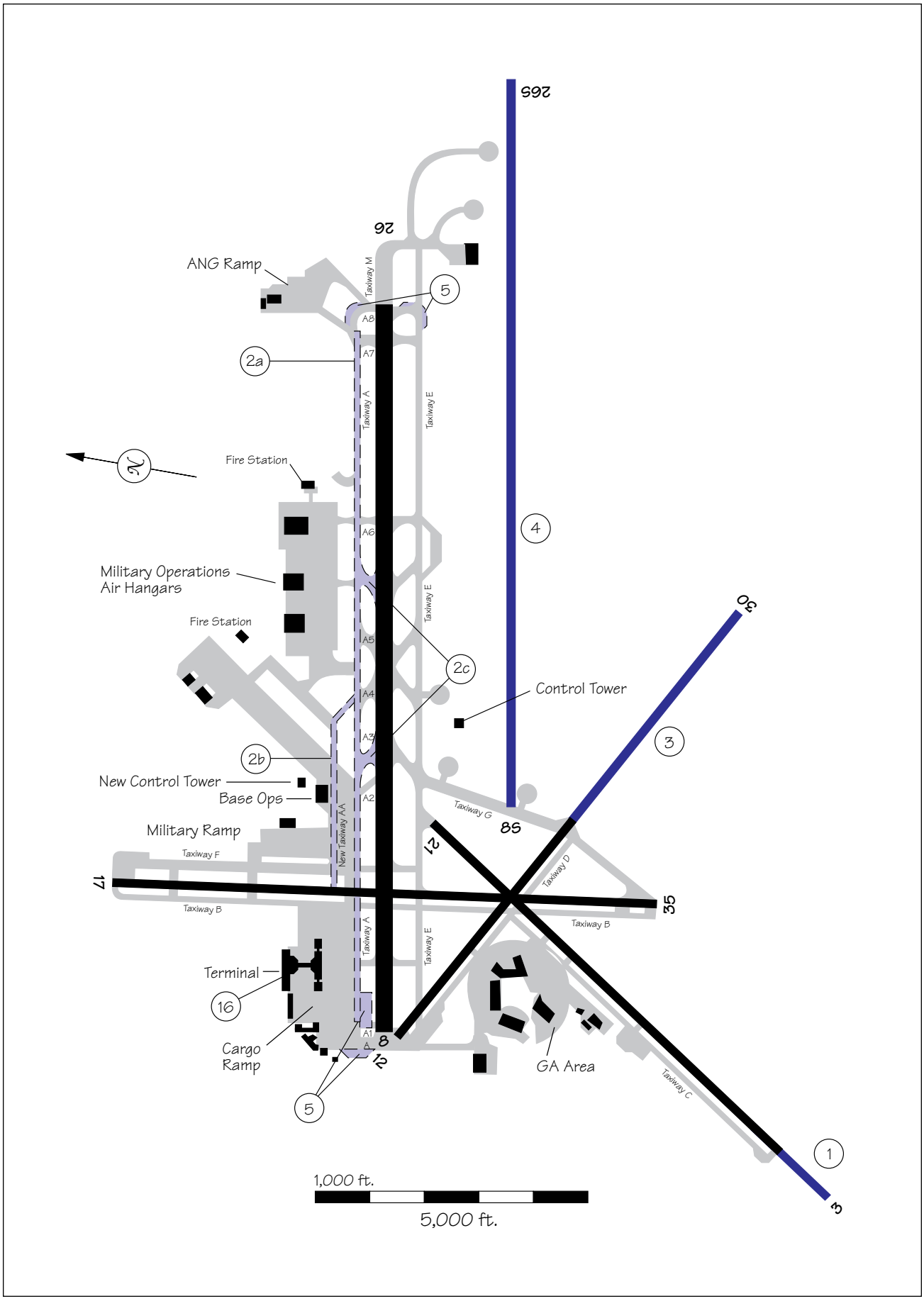
16. Touchdown RVR and touchdown zone lights on Runway 1L
17. Touchdown RVR and centerline lights on Runways 12 and 30 and touchdown zone lights on Runway 12

Operational Improvements

18. Simultaneous ILS approaches to existing parallel runways
19. Simultaneous converging instrument approaches to Runways 12 and 19R or 12 and 19L
20. 2.5 nm longitudinal spacing inside outer marker (between similar class, non-heavy arrivals)

User Improvements

21. Redistribute traffic more uniformly within the hour
22. Improve reliever airports: reduce small-slow aircraft by 25%; by 50%


26S
26
ANG Ramp
Taxiway M
5
A8
2a
A7
Taxiway A
Taxiway E
N
Fire Station
A6
4
Military Operations
Air Hangars
Taxiway E
Fire Station
A5
2c
30
Control Tower
A4
A3
3
2b
New Control Tower
Base Ops
A2
Taxiway G
8S
Military Ramp
Taxiway F
New Taxiway AA
21
Taxiway D
17
Taxiway B
35
Taxiway B
Taxiway A
Taxiway E
Terminal
16
A1
8
12
Cargo
Ramp
GA Area
Taxiway C
5
1
1,000 ft.
5,000 ft.

Albuquerque International Airport Capacity Design Team Project Summary

Proposed Alternatives

Airfield Improvements

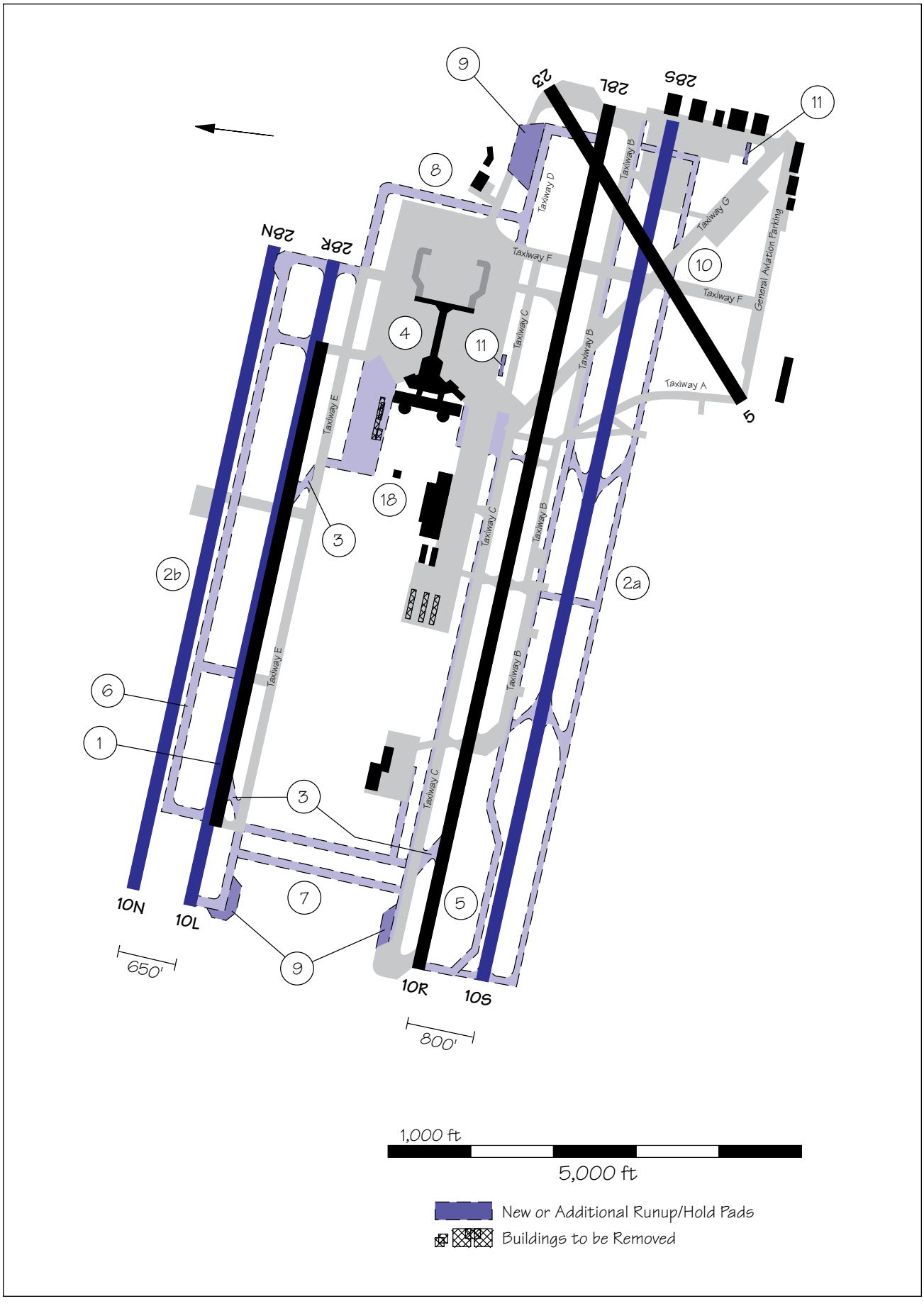
1. Extend, widen, and strengthen Runway 3/21 and operate as a 10,000-foot air carrier runway
2. Construct new and improve existing taxiways and exits
   - 2a. Widen and strengthen Taxiway A along full length, parallel to and north of Runway 8/26
   - 2b. Construct 4,000 ft. Taxiway AA parallel to and north of Taxiway A, from Runway 17/35 to Exit A4
   - 2c. Improve or add angled (high-speed) exits on Runway 8/26 to Taxiway A
3. Extend Runway 12/30 to the southeast and operate as a 10,000-foot air carrier runway
4. Construct new parallel air carrier runway south of Runway 8/26
   - 4a. Operate as a dependent IFR runway
   - 4b. Operate as an independent IFR runway
5. Construct holding areas for Runway 8/26

Facilities and Equipment Improvements

6. Install ILS on Runway 3
7. Install CAT II/III ILS on Runway 8
8. Install ILS on Runway 35
9. Install TVOR/DME
10. Install ILS on Runway 30

Operational Improvements

11. Benefit of MLS procedures to Runway 26
12. Reduce in-trail separations to 2.5 nm from 3 nm in IFR
13. Evaluate impact of noise abatement procedures
14. Implement dependent converging approaches with ILS on Runways 3 and 8
15. Enhance GA reliever airports
16. Terminal expansion (added gates)
17. Assign designated areas for civil helicopters


9
23
28L
28S
11
8
Taxiway D
Taxiway B
Taxiway G
General Aviation Parking
28N
28R
Taxiway F
10
Taxiway F
4
11
Taxiway C
Taxiway B
Taxiway A
G
Taxiway E
18
3
Taxiway C
Taxiway B
2b
2a
6
Taxiway E
Taxiway B
1
3
Taxiway C
7
5
10N
10L
650'
9
10R
10S
800'
1,000 ft
5,000 ft
New or Additional Runup/Hold Pads
Buildings to be Removed

Port Columbus International Airport Capacity Design Team Project Summary

Proposed Alternatives

Airfield Improvements

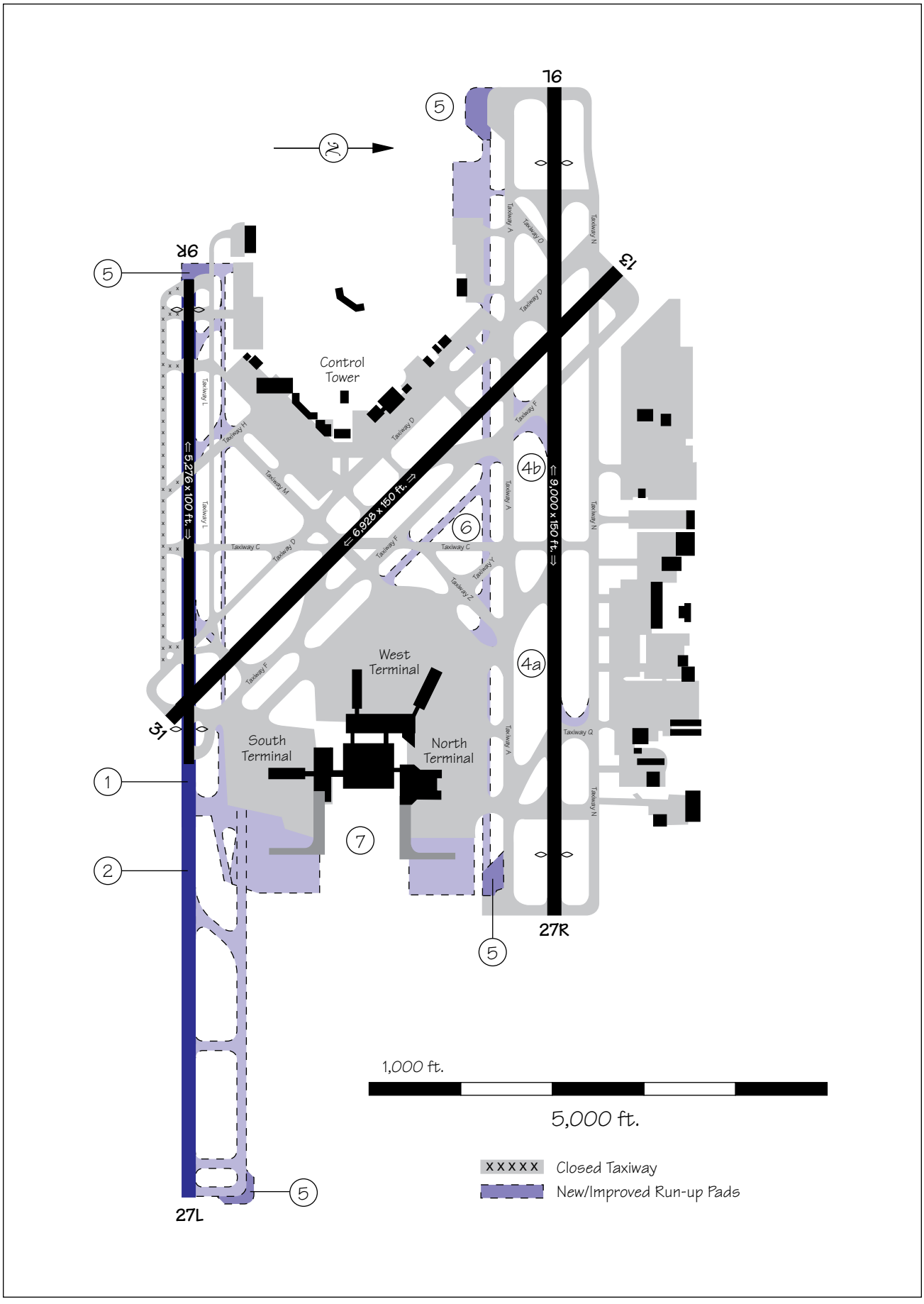
1. Relocate and extend Runway 10L/28R
   1a. Extend Runway 10L 1,000 ft. east
   1b. Extend Runway 28R 1,000 ft. west
   1c. Extend Runway 10L/28R to 8,000 ft.
2. Build a third parallel runway 800 ft. south of Runway 10L/28R; use existing Runway 10L/28R as a departure runway; build fourth runway 600 ft. north of Runway 10L/28R
3. Improve or add angled exits
4. Expand passenger terminal
   4a. Add 10 gates on west side
   4b. Add 6 gates on east side
   4c. Add 10 additional gates
5. Relocate west end of Taxiway B
6. Build north parallel taxiway for Runway 10L/28R
7. Build crossover taxiway at west end between Runway 10L/28R and Runway 10R/28L
   7a. Build one-way taxiway
   7b. Build two-way taxiway
8. Build bypass taxiway on east side
9. Build run-up pads at all air carrier runway ends
10. Reconstruct/strengthen Taxiway G south of Runway 10R/28L
11. Build blast area for engine runups north and south of Runway 28L

Facilities and Equipment Improvements

12. Install CAT I ILS on Runways 10L/28R and 10R/28L (with centerline lights)
13. Install CAT II ILS
14. Install Microwave Landing System (MLS) on Runway 28R
15. Install Precision Runway Monitor (PRM)
16. Install Airport Surface Detection Equipment (ASDE)
17. Install Distance Measuring Equipment (DME) on Runway 28L
18. Build new Airport Traffic Control Tower (ATCT)
19. Install additional NAVAIDS

Operational Improvements

20. Impact of noise reduction procedures
    20a. Effect of Stage III aircraft
    20b. Unrestricted use Runway 10L/28R
21. Provide 1.5 nm staggered approaches to Runways 10R/28L and 10L/28R in IFR
22. Provide 2.5 nm in-trail separations between similar class aircraft
23. Redistribute traffic more uniformly within the hour
24. Enhance GA reliever airports
25. Conduct airspace capacity design project and restructure area airspace


16
13
9R
31
27L
27R
Control Tower
West Terminal
South Terminal
North Terminal
⇐ 5,276 x 100 ft. ⇒
⇐ 6,928 x 150 ft. ⇒
⇐ 9,000 x 150 ft. ⇒
Taxiway A
Taxiway C
Taxiway D
Taxiway F
Taxiway H
Taxiway L
Taxiway M
Taxiway N
Taxiway Q
Taxiway Y
Taxiway Z
1,000 ft.
5,000 ft.
Closed Taxiway
New/Improved Run-up Pads

Fort Lauderdale International Airport Capacity Design Team Project Summary

Proposed Alternatives

Airfield Improvements

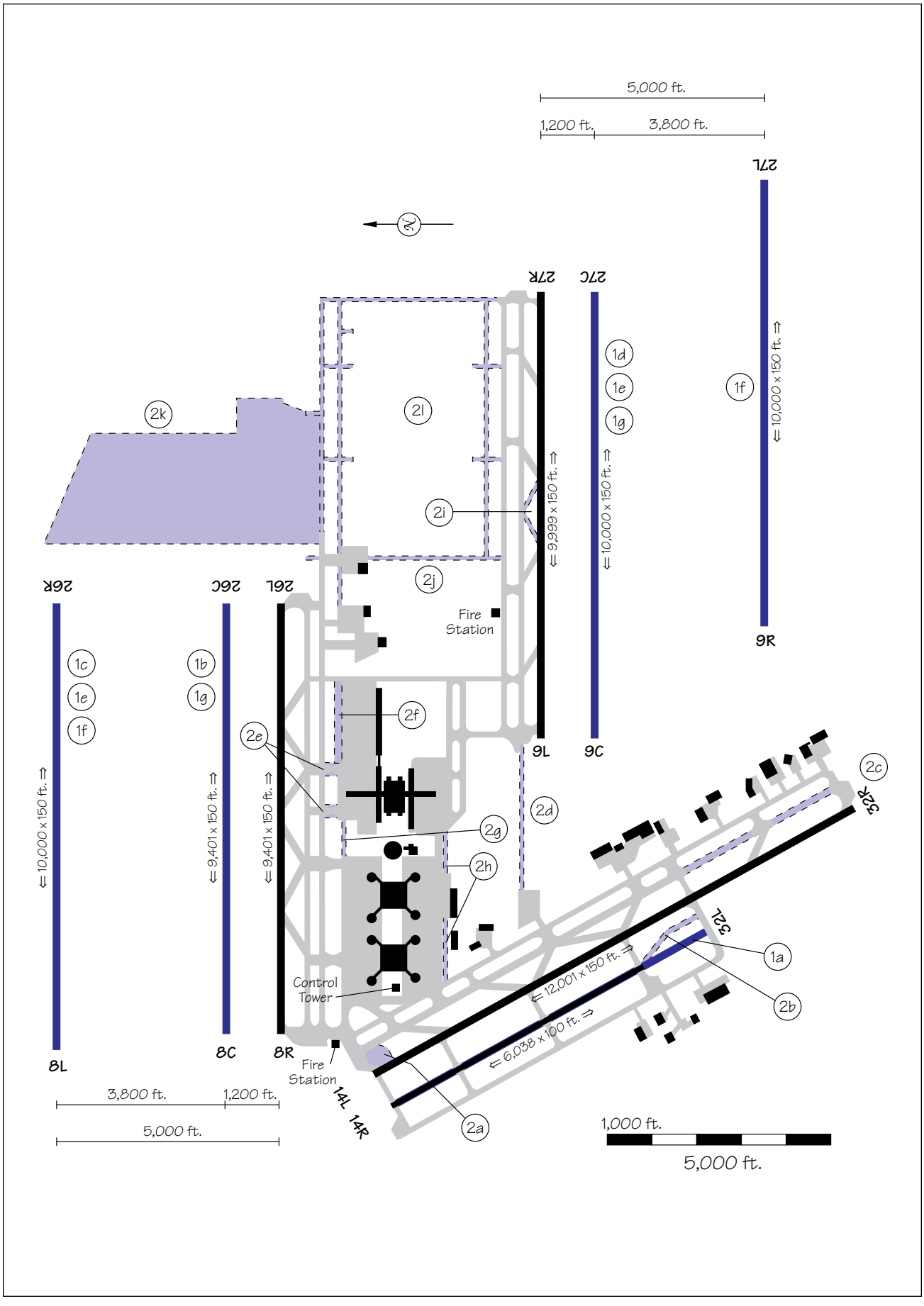
1. Extend Runway 9R/27L— 6,000 ft. long, 150 ft. wide, and CAT I ILS
   - 1a. 2 nm stagger in IFR
   - 1b. 1.5 nm stagger in IFR
   - 1c. Simultaneous parallel IFR approaches (with PRM)
   - 1d. Simultaneous approaches and 2.5 nm minimum in IFR (1c and 16)
2. Extend Runway 9R/27L — 10,000-ft. long, 150 ft. wide, and CAT I ILS
   - 2a. 2 nm stagger in IFR
   - 2b. 1.5 nm stagger in IFR
   - 2c. Simultaneous parallel IFR approaches (with PRM)
   - 2d. Simultaneous approaches and 2.5 nm minimum in IFR (2c and 16)
3. Extend Runway 9R/27L to 10,000 ft; operate under restricted use
   - 3a. With 2 nm stagger in IFR
   - 3b. Simultaneous parallel IFR approaches (with PRM)
4. Improve angled exits
   - 4a. Widen fillets at Exit Q on Runway 9L
   - 4b. Widen angled exit Runway 27R, south, at Taxiway F
5. Add or expand run-up pads to stage departures
6. Taxiway and exit improvement package
7. Expand terminal (international and air carrier)

Facilities and Equipment Improvements

8a. CAT I ILS on Runway 9R
8b. CAT I ILS on Runway 27L
9. CAT I ILS on Runway 31
10. CAT II/IIIA ILS on Runway 27R
11. Precision Runway Monitor (PRM) — when south runway extended
12. Upgrade FLL radar — commission ASR-9
13. Relocate TVOR/VOR off Airport
14. Vortex Advisory System (VAS)
15. Low Level Wind Shear Alert System (LLWAS)

Operational Improvements

16. Reduce minimum in-trail separations to 2.5 nm
17. Reduce stagger to 1.5 nm in IFR
18. Unrestricted use of Runway 13/31 for departures (cost of noise restrictions on use of Runway 13/31)
19. Unrestricted use of Runway 13 (impact of Ft. Lauderdale Executive Airport (FXE) operations)
20. Conduct a study of South Florida airspace and implement airspace management
21. Increase/enhance reliever airports
22. Redistribute traffic more uniformly within the hour


5,000 ft.
1,200 ft.
3,800 ft.
27L
27R
27C
9R
9L
9C
26R
26C
26L
8L
8C
8R
14L 14R
32R
32L
1a
1b
1c
1d
1e
1f
1g
2a
2b
2c
2d
2e
2f
2g
2h
2i
2j
2k
2l
⇐ 10,000 x 150 ft. ⇒
⇐ 9,999 x 150 ft. ⇒
⇐ 9,401 x 150 ft. ⇒
⇐ 12,001 x 150 ft. ⇒
⇐ 6,038 x 100 ft. ⇒
Fire Station
Control Tower
1,000 ft.
5,000 ft.

Houston Intercontinental Airport Capacity Design Team Project Summaries

Proposed Alternatives

Airfield Runway Improvements

1a. Extend, widen, and strengthen Runway 14R/32L for air carrier departures, with arrivals on Runways 26L and 27R
1b. Construct air carrier Runway 8C/26C 1,200 ft. north of Runway 8R/26L
1c. Construct air carrier Runway 8L/26R to support triple independent approaches
1d. Construct air carrier Runway 9C/27C 1,200 ft. south of Runway 9L/27R
1e. Construct both Runway 8L/26R and Runway 9C/27C
1f. Construct both Runway 8L/26R and new air carrier Runway 9R/27L to support quadruple independent approaches
1g. Construct both Runway 8C/26C and Runway 9C/27C

Airfield Taxiway Improvements

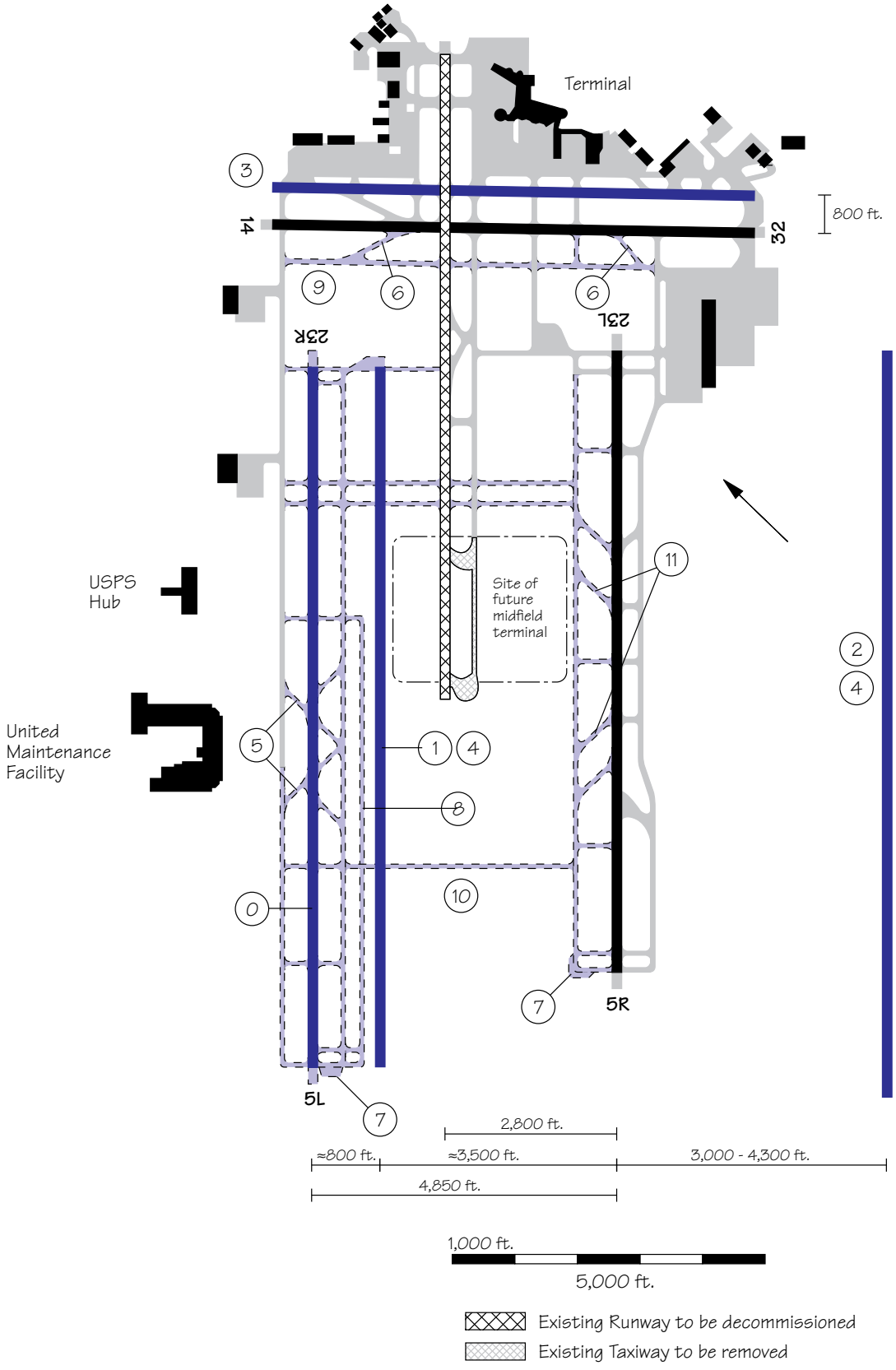
2a. Add independent taxiway and departure holding pads to existing Runway 14R/32L
    2a.1. With current runway assignments
    2a.2. As air taxi/commuter runway only
2b. Add high speed exit off Runway 14R
2c. Extend Taxiway WA from Taxiway WL to Taxiway WB to allow two-way traffic
2d. Extend Taxiway WH to Taxiway SA (bridging over JFK Boulevard)
2e. Widen Taxiways NJ and NK to allow two-way traffic
2f. Extend Mickey LeLand Memorial International Airlines Building (IAB) Ramp
2g. Extend North Ramp to connect Terminals B and C
2h. Add dual taxiway at South Terminal Ramp (bridging over JFK Boulevard)
2i. Add high speed exits at Taxiways SG and SH
2j. Add second crossfield taxiway at midfield to provide two-way flow
2k. Construct cargo gate and taxiway complex north side
2l. Construct new terminal

Facilities and Equipment Improvements

3a. Upgrade to CAT III ILS on Runway 27R

Operational Improvements

3b. Conduct dependent IFR approaches to Runways 14L & 9L and 14L & 26
4. Distribute traffic more uniformly during peak periods
5. Construct new reliever airport on west side
6. Add a public-use heliport at IAH
7. Construct additional airline hub at Terminal B


Terminal
3
14
32
800 ft.
9
6
6
23L
23R
USPS
Hub
Site of
future
midfield
terminal
11
2
4
United
Maintenance
Facility
5
1
4
8
10
0
7
5R
5L
7
2,800 ft.
≈800 ft.
≈3,500 ft.
3,000 - 4,300 ft.
4,850 ft.
1,000 ft.
5,000 ft.
Existing Runway to be decommissioned
Existing Taxiway to be removed

Indianapolis International Airport Capacity Design Team Project Summaries

Proposed Alternatives

Airfield Improvements

0. Replace runway 5L/23R
1. Build third dependent runway 800 ft. east of Runway 5L/23R
2. Build third independent northeast/southwest runway (with Precision Runway Monitor (PRM))
3. Build a second northwest/southeast dependent runway 800 ft. northeast of Runway 14/32
4. Build both third dependent runway and fourth independent northeast/southwest runway (combines 1 and 2)
5. Add angled exits to Taxiway F for future Runway 5L/23R
6. Add angled exits Runway 14/32
7. Build departure sequencing pads for Runways 5L and 5R
8. Build dual taxiway system for future Runway 5L/23R
9. Build northeast crossover Taxiway C
10. Build fourth crossfield taxiway at southwest end
11. Add angled exits for Runway 5R/23L

Facilities and Equipment Improvements

12. Add centerline lights Runway 14/32
13. Install touchdown runway visual range (RVR) Runway 14
14. Install Airport Surface Detection Equipment (ASDE) radar
15. Install surface movement guidance and control system
16. Install Aircraft Situation Display (ASD)
17. Install approach light system (ALSF-2) on Runway 14/32
18. Upgrade low-level wind shear advisory system
19. Upgrade RVR to CAT IIIB and ICAO standards in Runways 5R and 5L
20. Install doppler weather radar

Operational Improvements

21. End-fire glide slope for Runways 23R and 14
22. Reduce in-trail separations to 2.5 nm
23. Develop dependent converging approaches
24. Effect of noise restrictions
25. Reduce runway occupancy times
26. Continue enhancement of reliever airports to accomodate a reduction in small/slow aircraft operations at IND